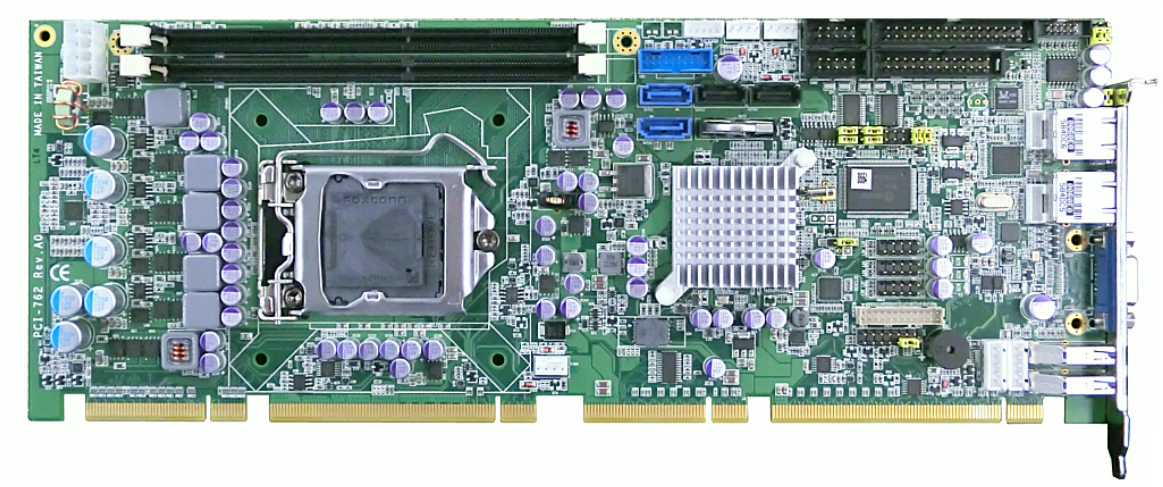
kontron

» User Guide «



PCI-762

User's Guide (Version 1.0)

1055-9117

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2. Introduction

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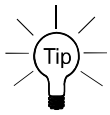
2.1. Symbols used in this Manual

Symbol	Meaning
	This symbol indicates the danger of injury to the user or the risk of damage to the product if the corresponding warning notices are not observed.
	This symbol indicates that the product or parts thereof may be damaged if the corresponding warning notices are not observed.
	This symbol indicates general information about the product and the user manual.
	This symbol indicates detail information about the specific product configuration.
	This symbol precedes helpful hints and tips for daily use.

3. Safety Instructions

3.1. Safety Instructions for the Lithium Battery

The PCI-762 board is equipped with a Lithium battery. For the replacing of this battery please observe the instructions described in the chapter 10.1 "Replacing the Lithium Battery".

	Caution! Danger of explosion when replaced with wrong type of battery. Replace the battery only with UL recognized Lithium battery that has the same or equivalent type recommended by Kontron.
	Do not dispose of lithium batteries in domestic waste. Dispose of the battery according to the local regulations dealing with the disposal of these special materials (e.g. to the collecting points for the disposal of batteries).

3.2. Basic Safety and EMC Compatibility

The PCI-762 board is a fixed component that shall be installed into a stationary system by applying good engineering practices and respecting the information on the intended use of the components with a view to meeting the protection requirements [refer to (a) and (b)].

The PCI-762 board was designed and manufactured, having regard to the state of the art, as to ensure that:

(a) the electromagnetic disturbance generated does not exceed the level above which radio and telecommunications equipment or other equipment cannot operate as intended;

(b) it has a level of immunity to the electromagnetic disturbance to be expected in its intended use which allows it to operate without unacceptable degradation of its intended use.

The PCI-762 board was designed, manufactured and checked according to the basic safety requirements in the scope of the low-voltage (LVD) directive.

4. Important Instructions

The manufacturer's instructions provide useful information on your PCI-762 board.

4.1. Electrostatic Discharge (ESD)

The components on the board are sensitive to static electricity. Care must therefore be exercised at all times during handling and inspection of the PCI-762 board, in order to ensure the product integrity.

- ❑ Do not handle this product while it is outside its protective enclosure, while it is not used for operational purposes, unless it is otherwise anti-static protected.
- ❑ Unpack or install this product only at EOS/ESD safe workstations. When safe work station are not guaranteed, it is important for the user to be electrically discharged before touching the PCI-762 board with his/her hands or tools. This is most easily done by touching a metal part of your system housing.
- ❑ Only hold the assemblies at the edge.
- ❑ Do not touch any connection pins or conductors on the assembly.

4.2. Note on the Warranty

Due to their limited service life, parts which, by their nature, are especially subject to wear (wearing parts) are not included in the guarantee beyond the legal stipulations. This applies to the batteries, for example.

4.3. Exclusion of Accident Liability Obligation

Kontron Embedded Computers shall be exempted from the statutory accident liability obligation if the user fails to observe the safety instructions.

4.4. Liability Limitation / Exemption from the Warranty Obligation

In the event of damage to the device caused by failure to observe the hints in this manual and eventually on the device (especially the safety instructions), Kontron Embedded Computers shall not be required to honor the warranty even during the warranty period and shall be exempted from the statutory accident liability obligation.

4.5. General Instruction on Usage

In order to ensure safe operation, the user must observe the instructions and warnings contained in this manual.

- ❑ The PCI-762 board must be used in accordance with the instructions for use.
- ❑ The PCI-762 board is designed to be built-in to a system, which fulfill all necessary technical and environmental requirements.
- ❑ When installing the board into a system, ensure that the system is switched off and the systems power cord is disconnected from the power source. Disconnect all cable connections of peripheral devices from the system.
- ❑ Ensure that the DC operating voltages adheres to the specification given in the section 8.1"Electrical Specifications".
- ❑ Only devices and components which fulfill the requirements of a SELV circuit (security extra low voltage) in accordance with IEC / EN 60950-1 may be connected to the interfaces of the PCI-762 board.
- ❑ If extensions are made to the PCI-762 board, the legal stipulations and the board specifications must be observed.

5. Scope of Delivery

- ❑ 1x PCI-762 Board [PICMG 1.3 **S**ingle **B**oard **C**omputer (full-size)]
- ❑ Driver CD
- ❑ General Safety Instruction for IT Equipment
- ❑ Serial Part cable
- ❑ Slot Bezel with 4x USB 2.0

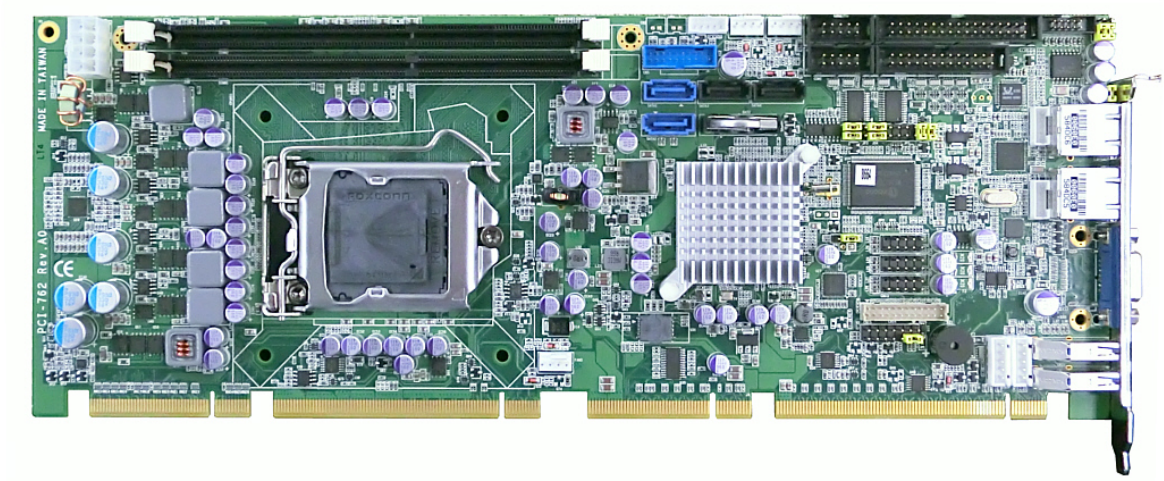
5.1. Labeling Information

Two types of printed labels on the PCI-762 board must show the following information:

1. Board identification label that has implemented: Board Designation/Serial Number/Part Number/Product Revision/QM-Field/Bar Code/Datamatrix Code
2. MAC-Address Labels

System Type	Product Designation	Product Identification
PCI-762	1054-9860	MBD_PCI-762-PICMG.1.3_LGA1155_Q77

6. Product Description



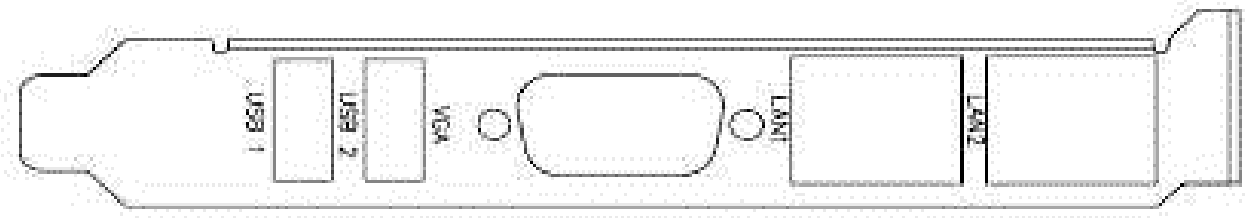
The PCI-762 PICMG 1.3 full-size Single Board Computer (SBC) supports LAG1155 socket H2 for Intel® Core™ i3 Desktop Processor, Intel® Core™ i5 Desktop Processor, Core™ i7 Desktop Processor with 32nm technology and Transfer Rate 1333/1600 MHz.

The board integrates Intel® Q77 chipset that delivers outstanding system performance through high-bandwidth interfaces, multiple I/O functions for interactive applications and various embedded computing solutions.

There are two 240-pin DDR3 DIMM sockets for dual channel DDR3 1333/1600, maximum memory capacity up to 16GB.

The board also features dual Gigabit Ethernet, two SATA-6.0Gb/s and two SATA-3.0Gb/s and SATA RAID 0/1/5/10 by PCH. Ten USB 2.0 & four USB 3.0 high speed compliant ports and built-in Intel® HD Audio Digital Header can achieve the best stability and reliability for industrial applications.

6.1. I/O Bracket



7. Features

- **CPU**
  - **Intel® Core™ i3 Desktop Processor**
  - **Intel® Core™ i5 Desktop Processor**
  - **Intel® Core™ i7 Desktop Processor**
- **System Chipset**
  - **Intel® Q77**
- **CPU Socket**
  - **LGA1155 Socket**
- **DRAM Transfer Rate**
  - **1066/1600 MHz**
- **BIOS**
  - AMI BIOS via SPI interface with socket
- **System Memory**
  - Two 240-pin DDR3 1333/1600 DIMM sockets
  - Maximum up to 16GB DDR3 memory
  - Supports DDR3 1066/1333 memory
- **Onboard Multi-I/O**
  - Parallel Port: one 26-pin 2.54-pitch box-header, SPP/EPP/ECP supported
  - Serial Port: one for RS-232/422/485 with 10-pin, 2.54-pitch box-header (COM1) and one port for RS-232 with 10-pin, 2.54-pitch box-header (COM2)
  - Floppy controller: one 34-pin, 2.54-pitch box-header supports two drives (1.44MB for each)
- **VGA Controller**
  - Intel® Arrandale integrated a Graphic processing unit processor which goes with Q77 chipset with VGA, DisplayPort (co-lay with VGA) and DVI
  - Memory Size - Intel® DVMT 5.0 supported; preallocated memory for frame buffer option as OS option:

    1. Windows XP:
       * For Total System Memory < 1GB,
         Graphics sharing memory = 128 MB Maximum;
       * For 1 GB to 1.5 GB Total System Memory,
         Graphics sharing memory = 512 MB Maximum;
       * For 1.5 GB to 2 GB Total System Memory,
         Graphics sharing memory = 768 MB Maximum;
       * For 2 GB and Above Total System Memory,
         Graphics sharing memory = 1GB Maximum.
    2. Windows Vista:
       * Graphics sharing memory max to 0.5* (OS Ram Size – 512)
  - Resolution -- Analog output -- the analog port utilizes an integrated 400MHz 24-bit RAMDAC that can directly drive a standard progressive scan analog monitor up to a resolution of 2048x1536 pixels with 32-bit color at 75 Hz
  - Analog Output Interface -- CRT from DAC output via 15-pin D-Sub connector on the edge; CRT always ON supported

- **USB Interface**
  - Ten USB ports compliant with USB Spec. Rev. 2.0 (6 ports on board, 4 ports to SHB connector-C golden fingers)
  - Four USB ports compliant with USB Spec. Rev. 3.0 (2 ports on rear I/O, 2 ports on board)
- **Ethernet**
  - The LAN1/LAN2 are Intel 82579LM with iAMT 7.0 / Intel 82574L Ethernet controller support 10/100/1000 Mb/s
- **Serial ATA**
  - Support Serial ATA/Serial ATA II
  - Two Serial ATA-6Gb/s and two Serial ATA-3Gb/s performance and SATA RAID 0/1/5/10 by Q77
- **Audio**
  - 10-pin 2.0 pin-header (Intel® HD Audio Digital Header)
- **Hardware Monitoring**
  - Monitoring temperatures, voltages, and cooling fan status
- **Watchdog Timer**
  - Reset Supported (1-255 level)
- **Dimensions**
  - 338mm x 126mm

All specifications and images are subject to change without notice.

8. Main Specifications

8.1. Electrical Specifications

Board Version	Type of the external PSU	Inputs via	
PCI-762	ATX PSU	Backplane and PICMG 1.3 edge connector	+3.3 VSB, +5 VSB, +3.3 V, +5.0 V, +12.0 V
		On-board 12 V ATX power connector: ATX2	+12V

8.2. Environmental Specifications

Operating Temperature	0 °C to 60 °C (32 °F to 140 °F)
Relative Humidity	10 % to 90 % (non-condensing)

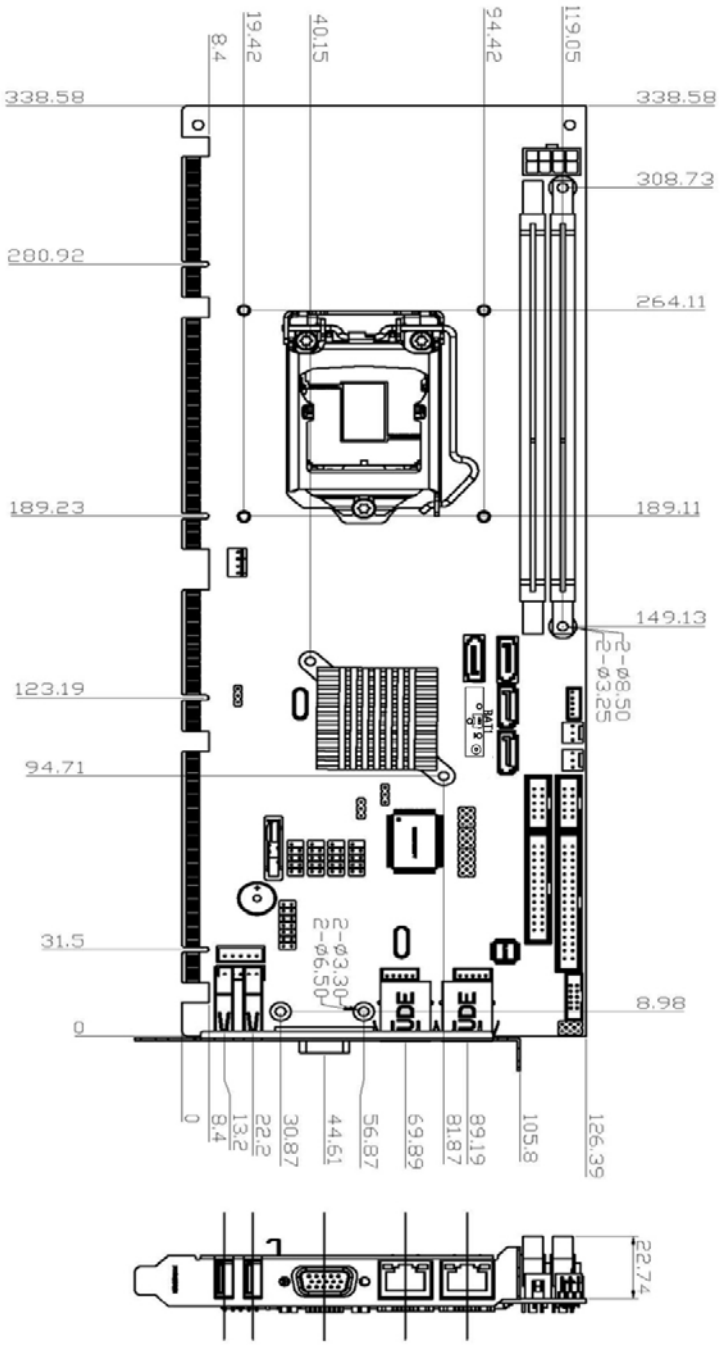
8.3. CE Directives

CE Directives	
Electrical Safety	General Product Safety Directive (GPSD) 2001/95/EC Low Voltage Directive (LVD) 2006/95/EC
ElectroMagnetic Compatibility (EMC)	EMC Directive 2004/108/EC

8.4. Mechanical Specifications

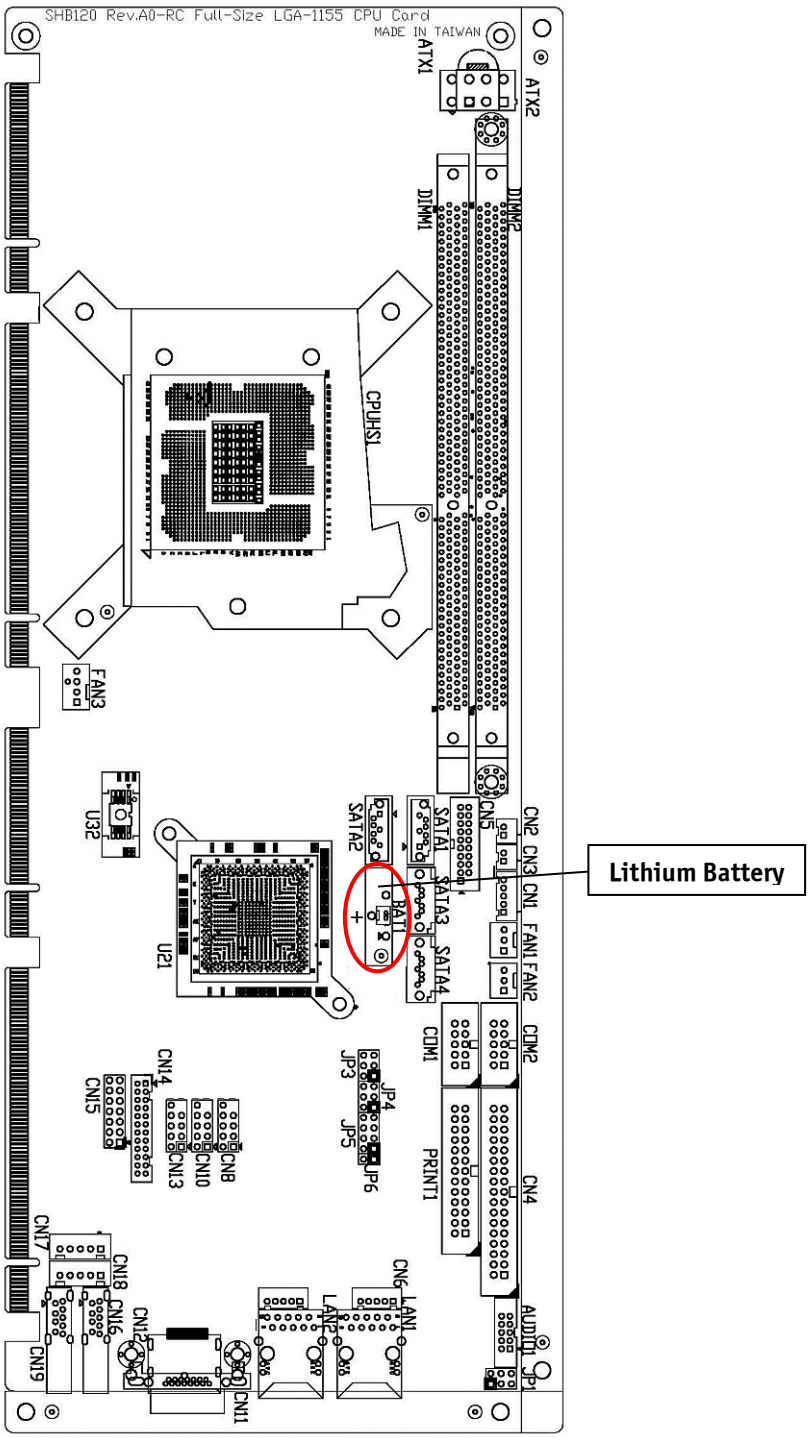
Dimension	PCI-762
Height x Width	338 mm x 126 mm
Weight	0.450 kg (0.992 lbs.) (without CPU fan)

8.4.1. Board Dimensions



9. Jumpers and Connectors

9.1. Board Layout



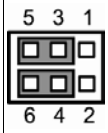
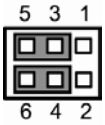
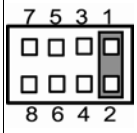
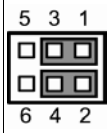
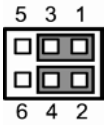
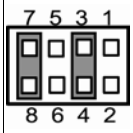
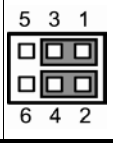
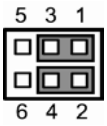
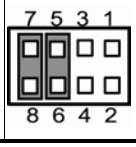
9.2. Jumper Settings

Proper jumper settings configure the PCI-762 to meet your application purpose.

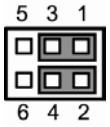
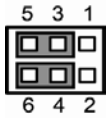
Jumper	Description	Jumper Setting
JP3	COM1 Mode Selection : RS-232	Short 3-5 , 4-6
JP4	COM1 Mode Selection : RS-232	Short 3-5 , 4-6
JP5	COM1 Mode Selection : RS-232	Short 1-2
JP1	Audio Amplifier Selection : Disable	Short 1-3 , 2-4
JP8	Clear RTC : Normal	Short 1-2

9.2.1. COM1 Mode Select Jumpers for RS-232/422/485 (JP3, JP4, JP5)

These jumpers select the COM1 port's communication mode to operate RS-232 or RS-422/485.

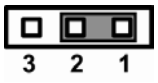
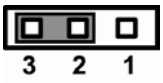
Description	Function	Jumper Setting		
COM1	RS-232 (Default)	**JP3** 	**JP4** 	**JP5** 
	RS-422	**JP3** 	**JP4** 	**JP5** 
	RS-485	**JP3** 	**JP4** 	**JP5** 

9.2.2. Audio Amplifier Jumper (JP1)

Function	Jumper Setting
Disable (Default)	
Enable	

9.2.3. Clear RTC Jumper (JP8)

You may need to use this jumper to clear the RTC if incorrect RTC settings.

Function	Jumper Setting
Normal (Default)	
Clear ME	

9.3. Connectors

Connectors connect this board with other parts of the system. Loose or improper connection might cause problems. Make sure all connectors are properly and firmly connected.

Here is a summary table that shows you all connectors on the board.

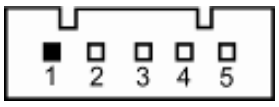
Connector	Label
SMBUS	CN1
Floppy Connecter	CN4
Internal USB3.0 Connector port 2/3	CN5
LAN2 External LED	CN6
LAN1 External LED	CN7
USB Port 4/5	CN8
USB Port 6/7	CN10
VGA Port	CN11
Display Port (BOM Option)	CN12
USB Port 8/9	CN13
DVI Connector	CN14
Axiomtek Front Panel	CN15
USB2.0/3.0 Port 1	CN16
Keyboard	CN17
Mouse	CN18
USB2.0/3.0 Port 0	CN19
SYS FAN	FAN1
AUX FAN	FAN2
CPU FAN	FAN3
RJ45 (WG82579LM)	LAN1
RJ45 (WG82574L)	LAN2
Print Connecter	PRINT1
SATA 0 6Gb(SATA3)	SATA1
SATA 1 6Gb(SATA3)	SATA2
SATA Port 2	SATA3

Connector	Label
SATA Port 3	SATA4
SATA Port 4 (on edge connector)	(no label)
SATA Port 5 (on edge connector)	(no label)
COM1 Connector	COM1
COM2 Connector	COM2
Audio Connector	AUDIO1
ATX Connecter	ATX2

9.3.1. SMBUS Connector (CN1)

Connector SMBUS CN1 is for SMBUS interface support.

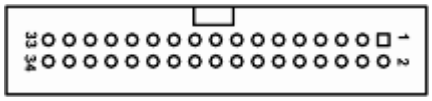
Pin	Signal
1	CLOCK
2	N.C
3	GND
4	DATA
5	+5V



9.3.2. Floppy Disk Port Connector (CN4)

The board provides a 34-pin header type connector, CN4, supporting up to two floppy drives. The floppy drives may be any one of the following types: 5.25" 360KB/1.2MB and 3.5" 720KB/1.44MB/2.88MB.

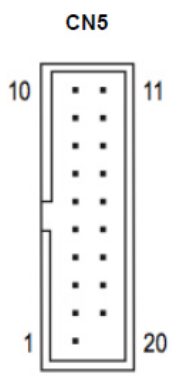
Pin	Signal	Pin	Signal	Pin	Signal
1	GND	2	Drive Density Select	3	GND
4	No connector	5	GND	6	No connector
7	GND	8	Index#	9	GND
10	Motor enable A#	11	GND	12	No connector
13	GND	14	Drive select A#	15	GND
16	No connector	17	GND	18	Direction#
19	GND	20	STEP#	21	GND
22	Write data#	23	GND	24	Write gate#
25	GND	26	Track 0 #	27	GND
28	Write protect#	29	No connector	30	Read data#
31	GND	32	Head selection#	33	No connector
34	Disk change#				



9.3.3. Internal USB Connectors (CN5)

The 19-pin standard Universal Serial Bus (USB 3.0) connectors, CN5 on this board is for installing versatile USB 3.0 interface peripherals.

Pin	Signal	Pin	Signal
1	VBUS0		
2	SSRX2-	19	VBUS1
3	SSRX2+	18	SSRX3-
4	GND	17	SSRX3+
5	SSTX2-	16	GND
6	SSTX2+	15	SSTX3-
7	GND	14	SSTX3+
8	USB2-	13	GND
9	USB2+	12	USB3-
10	ID	11	USB3+



9.3.4. Internal USB Connectors (CN8, CN10, CN13)

The 10-pin standard Universal Serial Bus (USB 2.0) connectors, CN8/10/13 on this board are for installing versatile USB interface peripherals.

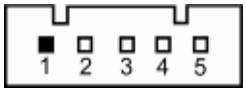
Pin	Signal	Pin	Signal
1	USB_PWR	2	USB_PWR
2	USB6-	4	USB7-
3	USB6+	6	USB7+
4	GND	8	GND
5	GND	10	GND

CN 13

The 5-pin standard Universal Serial Bus (USB) connectors, CN15, on this board are for installing versatile USB interface peripherals.

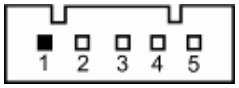
9.3.5. LAN2 LED Connectors (CN6)

Pin	Signal
1	+ 3.3V
2	LINK_ACT LED(-)
3	100, Low Active
4	+3.3V
5	1000, Low Active



9.3.6. LAN1 LED Connectors (CN7)

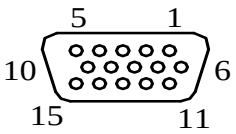
Pin	Signal
1	+ 3.3V
2	LINK_ACT LED(-)
3	100, Low Active
4	+3.3V
5	1000, Low Active



9.3.7. DB15 CRT Connector (CN11) Co-layout with CN12

CN11 is a DB15 connector commonly used for the CRT Monitor.

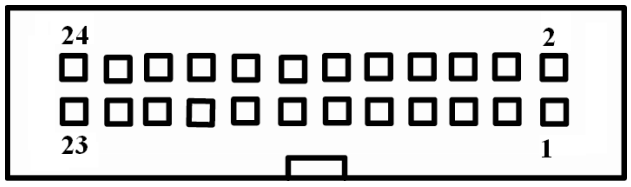
Pin	Signal	Pin	Signal	Pin	Signal
1	Red	2	Green	3	Blue
4	N.C	5	GND	6	DETECT
7	GND	8	GND	9	VCC
10	GND	11	N.C	12	DDC DATA
13	Horizontal Sync	14	Vertical Sync	15	DDC CLK



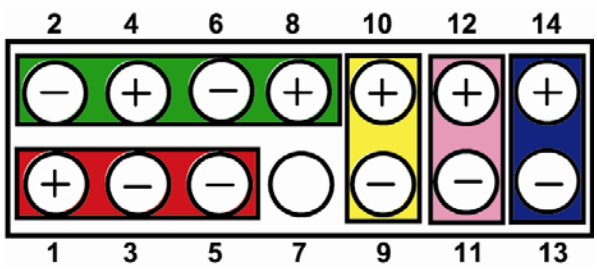
9.3.8. DVI-D Pin Header (CN14)

This board supports a 24-pin header (CN14) for DVI-D, via DVI-D cable.

Pin	Signal	Pin	Signal	Pin	Signal
1	Data2-	2	Data2+	3	GND
4	N.C.	5	N.C.	6	DDC CLK
7	DDC Data	8	N.C.	9	Data1-
10	Data1+	11	GND	12	N.C.
13	N.C.	14	+5V	15	GND
16	HPD	17	Data0-	18	Data0+
19	GND	20	N.C.	21	N.C.
22	GND	23	Clock+	24	Clock-



9.3.9. Front Panel Connector (CN15)



- **Power LED**

  This 3-pin connector denoted as Pin 1 and Pin 5 connects the system power LED indicator to such a switch on the case. Pin 1 is assigned as +, and Pin 5 as -. The Power LED lights up when the system is powered ON. Pin 3 is defined as GND.

- **External Speaker and Internal Buzzer Connector**

  Pin 2, 4, 6 and 8 can be connected to the case-mounted speaker unit or internal buzzer. While connecting the CPU card to an internal buzzer, please short pins 2-4; while connecting to an external speaker, you need to set pins 2-4 to Open and connect the speaker cable to pin 8 (+) and pin 2 (-).

- **ATX Power On/Off Button**

  This 2-pin connector denoted as Pin 9 and 10 connects the front panel's ATX power button to the CPU card, which allows users to control ATX power supply to be power on/off.

- **System Reset Switch**

  Pin 11 and 12 can be connected to the case-mounted reset switch that reboots your computer instead of turning OFF the power switch. It is a better way to reboot your system for a longer life of the system's power supply.

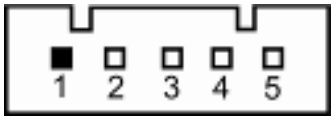
- **HDD Activity LED**

  This connection is linked to hard drive activity LED on the control panel. LED flashes when HDD is being accessed. Pin 13 and 14 connect the hard disk drive to the front panel HDD LED, Pin 13 assigned as -, and Pin 14 as +.

9.3.10. PS/2 Keyboard, Mouse Connectors (CN17, CN18)

The board provides the Keyboard (CN17) / Mouse (CN18) interface with a 5-pin connecter.

Pin	Signal
1	Clock
2	DATA
3	No connector
4	GND
5	5VSBY



9.3.11. External USB 3.0 Port Connectors (CN16, CN19)

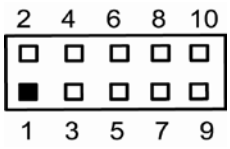
The 9-pin standard Universal Serial Bus (USB 3.0) port connector on the board is for the installation of peripherals supporting the USB interface.

Pin	Signal
1	VCC
2	D-
3	D+
4	GND
5	StdA_SSRX-
6	StdA_SSRX+
7	GND_DRAIN
8	StdA_SSTX-
9	StdA_SSTX+
10	Shield

9.3.12. RS232/422/485 Pin Assignment (COM1)

The serial interface for the board consists of COM1 support for RS-232 and COM1 for RS-232/RS-422/RS-485.

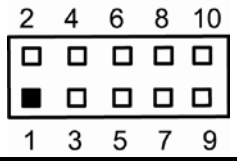
Pin	Signal Name		
	RS-232	RS-422	RS-485
1	Data Carrier Detect (DCD)	TX-	DATA-
2	Data Set Ready (DSR)	No connector	No connector
3	Receive Data (RXD)	TX+	DATA+
4	Request to Send (RTS)	No connector	No connector
5	Transmit Data (TXD)	RX+	No connector
6	Clear to Send (CTS)	No connector	No connector
7	Data Terminal Ready (DTR)	RX-	No connector
8	Ring Indicator (RI)	No connector	No connector
9	Ground (GND)	GND	GND
10	Disconnect(NI)	NI	NI



9.3.13. COM Port RS-232 Pin Assignment (COM2)

COM2 Serial Port 10-pin (Box-header) Connector Pin Assignment list

Pin	Signal	Pin	Signal
1	Data Carrier Detect (DCD)	2	Data Set Ready (DSR)
3	Receive Data (RXD)	4	Request to Send (RTS)
5	Transmit Data (TXD)	6	Clear to Send (CTS)
7	Data Terminal Ready (DTR)	8	Ring Indicator (RI)
9	Ground (GND)	10	Disconnect(NI)



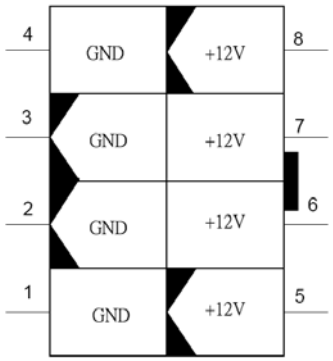
9.3.14. Intel® HD Audio Digital Header (AUDIO1)

Pin	Signal	Pin	Signal
1	MIC IN	2	GND
3	LINE_IN_L	4	GND
5	LINE_IN_R	6	GND
7	LINE_OUT_L	8	GND
9	LINE_OUT_R	10	GND

9.3.15. ATX 8 Pin 12V IN Connector (ATX2)

You can connect it to the ATX12V power supply for CPU Core Voltage.

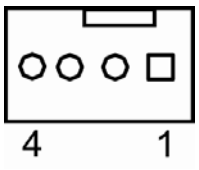
Pin	Signal
1	GND
2	GND
3	GND
4	GND
5	+12V
6	+12V
7	+12V
8	+12V



9.3.16. A CPU fan is always needed for cooling CPU heat (FAN3)

The CPU fan connector FAN3 provides power to the CPU fan.

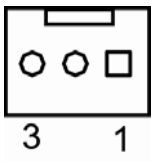
Pin	Signal
1	Ground
2	+12V
3	Rotation Detection
4	Speed Control



9.3.17. System & Auxiliary Fan Connectors (FAN1, FAN2)

You can connect the system cooling fan cable to FAN1/FAN2 for system cooling fan power.

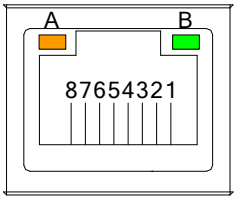
Pin	Signal
1	GND
2	+12V
3	Rotation Detection



9.3.18. Ethernet RJ-45 Connectors (LAN1, LAN2)

The RJ-45 connectors LAN1 and LAN2 are for Ethernet. To connect the board to 100-Base-T or 1000-Base-T hub, just plug one end of the cable into LAN1 and connect the other end (phone jack) to a 100-Base-T hub or 1000-Base-T hub.

Pin	Signal
1	Tx+ (Data transmission positive)
2	Tx- (Data transmission negative)
3	Rx+(Data reception positive)
4	RJ-1(For 1000 base T-Only)
5	RJ-1(For 1000 base T-Only)
6	Rx- (Data reception negative)
7	RJ-1(For 1000 base T-Only)
8	RJ-1(For 1000 base T-Only)
A	Active LED
B	Speed LED



9.3.19. Parallel Port Connector (PRINT1) Print Port Connector

This board has a multi-mode parallel port to support:

- **Standard Mode:**

  IBM PC/XT, PC/AT and PS/2™ are compatible with bi-directional parallel port.

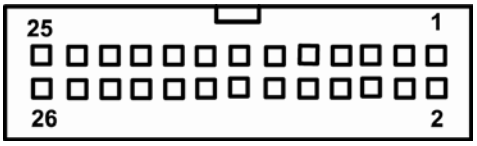
- **Enhanced Mode:**

  Enhance parallel port (EPP) is compatible with EPP 1.7 and EPP 1.9 (IEEE 1284 compliant).

- **High Speed Mode:**

  Microsoft and Hewlett Packard extended capabilities port (ECP) is IEEE 1284 compliant.

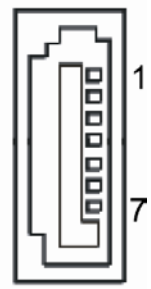
Pin	Signal	Pin	Signal
1	Strobe#	2	Auto Form Feed#
3	Data 0	4	Error#
5	Data 1	6	Initialize#
7	Data 2	8	Printer Select In#
9	Data 3	10	GND
11	Data 4	12	GND
13	Data 5	14	GND
15	Data 6	16	GND
17	Data 7	18	GND
19	Acknowledge#	20	GND
21	Busy	22	GND
23	Paper Empty#	24	GND
25	Printer Select	26	N.C



9.3.20. SATA Connectors (SATA1[3.0], SATA2[3.0], SATA3, SATA4)

These SATA connectors are for high-speed SATA interface ports and they can be connected to hard disk devices.

Pin	Signal
1	GND
2	SATA_TX+
3	SATA_TX-
4	GND
5	SATA_RX-
6	SATA_RX+
7	GND



10. Lithium Battery

PCI-762 is provided with a 3.0 V "coin cell" lithium battery for the RTC operation and CMOS Setup RAM. Please observe the chapter 3.1 "Safety Instructions for the Lithium Battery".

10.1. Replacing the Lithium Battery

To replace the battery please proceed as follows:

1. Turn the power off.
2. If your system is equipped with expansion cards, remove them first, if necessary.
3. Remove the battery by pressing outwards the ejector spring.
4. Insert the new battery into the socket.
5. Make sure that you insert the battery correctly. The minus pole must be positioned as marked in the picture included in the section 9.1 "Board Layout".

The lithium battery must be replaced with an identical battery or a battery type recommended by Kontron Embedded Computers (Lithium battery 3.0 V for RTC, type: CR2032).

	Caution! Danger of explosion when replaced with wrong type of battery. Replace the battery only with UL recognized Lithium battery that has the same or equivalent type recommended by Kontron.
	Do not dispose of lithium batteries in domestic waste. Dispose of the battery according to the local regulations dealing with the disposal of these special materials (e.g. to the collecting points for the disposal of batteries).

11. Hardware Description

11.1. Processors

The PCI-762 Series supports Intel® Core™ 2 Quad / Core™ 2 Duo/Celeron® processors, which make your system operated under Windows® XP and Linux environments. The system performance depends on the processor. Make sure all correct settings are arranged for your installed processor to prevent the CPU from damages.

11.2. BIOS

The PCI-762 Series uses AMI Plug and Play BIOS with a single 32Mbit SPI Flash.

11.3. System Memory

The PCI-762 supports four 240-pin DDR3 DIMM sockets for a maximum memory of 8GB DDR3 SDRAMs. The memory module can come in sizes of 1GB, 2GB and 4GB.

11.4. Hardware Installation

Before installing the processor, please access Intel® website for more detailed information

Processor Integration Video (LGA1155):

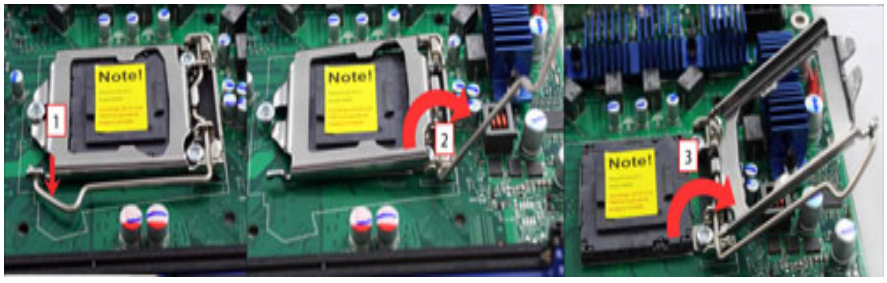
http://www.intel.com/support/tw/processors/sb/CS-030860.htm .

11.4.1. Installing the Processor

The LGA1155 processor socket comes with a cover to protect the processor. Please install the processor into the CPU socket step by step as below:

Step1: Opening the Socket

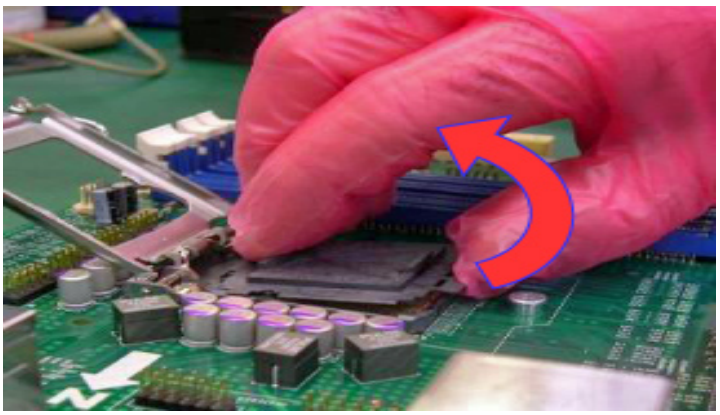
1. Disengage load lever by releasing down and out on the hook. This will clear retention tab.
2. Rotate load lever to open position at approximately 135°.
3. Rotate load plate to open position at approximately 150°.



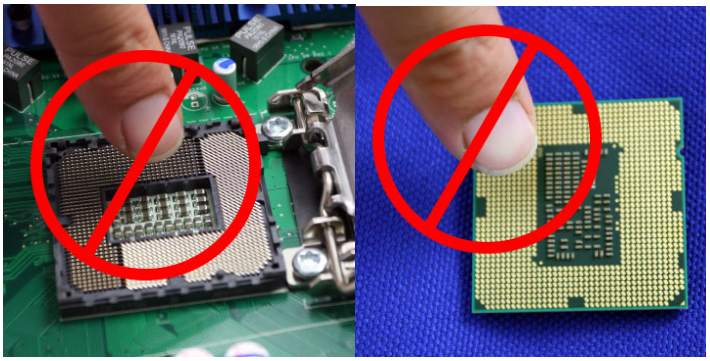
☞ Apply pressure to corner with right-hand thumb when opening or closing load lever - otherwise lever will bounce back (as a mouse trap) causing bent contacts.

Step 2: Removing the socket protective cover

1. Place thumb against the front edge of the protective cover and rest index finger on the rear grip to maintain control of the cover.
2. Lift the front edge of the protective cover to disengage from the socket. Keep control of the cover by holding the rear grip with index finger.
3. Lift protective cover away from the socket, being careful not to touch the electrical contacts.



☞ Vertical removal is NOT recommended, as it requires higher force and can lead to socket contact damage.

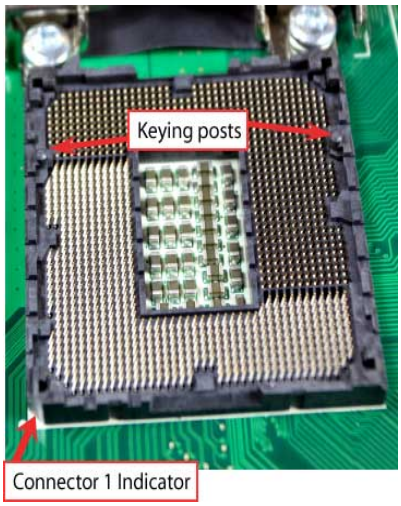


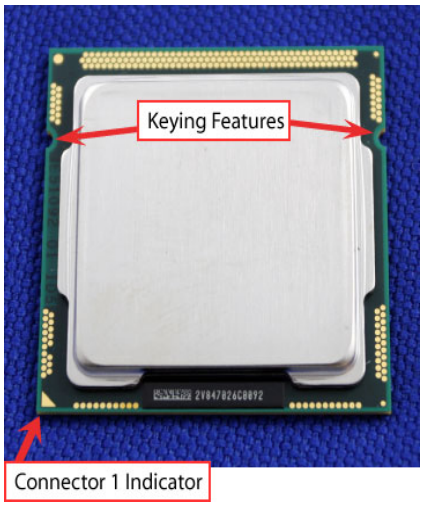
Never Touch Fragile Socket Contacts to Avoid Damage and DO NOT TOUCH PROCESSOR SENSITIVE CONTACTS AT ANY TIME DURING INSTALLATION.

Step 3: Processor installation

1. Lift processor package from shipping media by grasping the substrate edges. Scan the processor package gold pads for any presence of foreign material. If necessary, the gold pads can be wiped clean with a soft lint-free cloth and isopropyl alcohol.

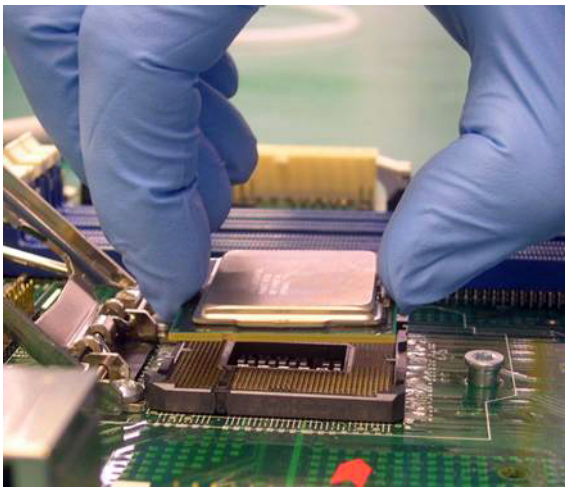
2. Scan the processor package gold pads for any presence of foreign material. If necessary, the gold pads can be wiped clean with a soft lint-free cloth and isopropyl alcohol.
3. Locate connection 1 indicator on the processor which aligns with connection 1 indicator chamfer on the socket, and notice processor keying features that line up with posts along socket walls.



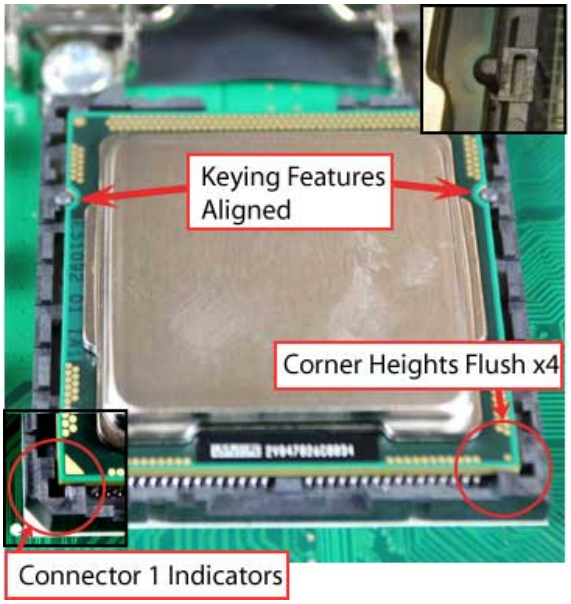


4. Grasp the processor with thumb and index finger along the top and bottom edges. (Do not touch the Orientation Notches.) The socket will have cutouts for your fingers to fit into (see image below).
5. Carefully place the processor into the socket body vertically (see image below).

☞	Tilting or roughly shifting it into place can damage socket contacts.
⚠	Do not use a vacuum pen for installation.



6. Verify that package is within the socket body and properly connected to orientation keys.

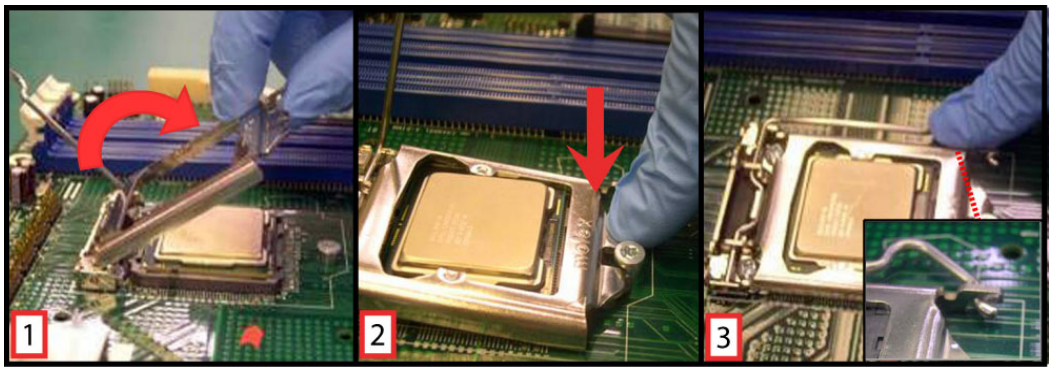


7. Close the socket (see image below):

a. Gently lower the load plate.

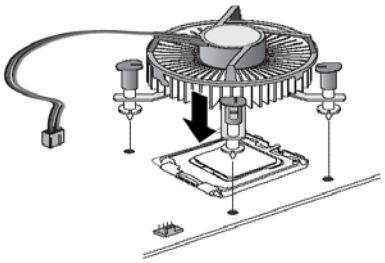
b. Make sure load plate's front edge slides under the shoulder screw cap as the lever is lowered.

c. Latch the lever under the top plate's corner tab, being cautious not to damage the motherboard with the tip of the lever.

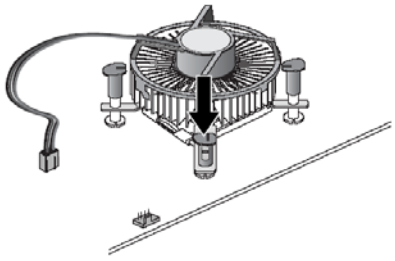


Step 4: Fan heatsink handling

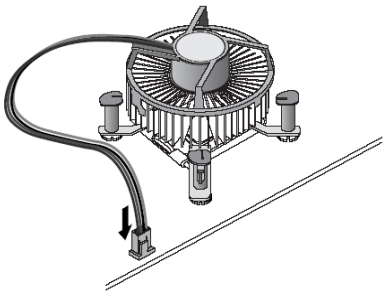
1. Orientate the CPU cooling fan to fixing holes on the board.



2. Screw the CPU cooling fan onto the board.



3. Make sure the CPU fan is plugged to the CPU fan connector.

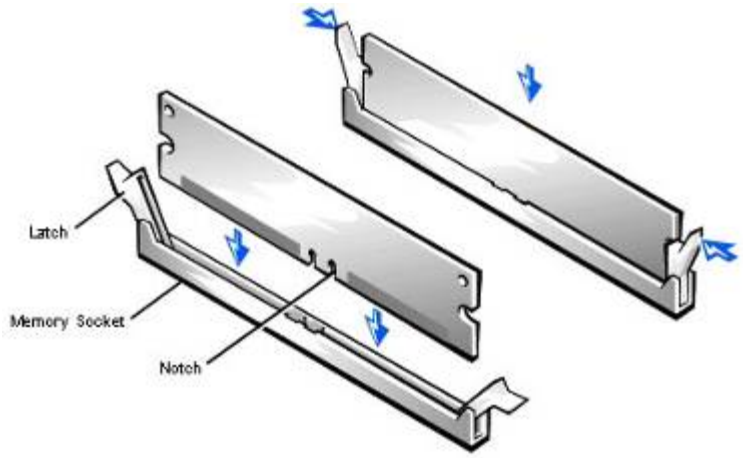


11.5. Installing the Memory

The board supports two 240-pin DDR3 DIMM memory sockets with maximum memory capacity up to 16GB.

Please follow the steps below to install the memory modules:

1. Push down latches on each side of the DIMM socket.
2. Align the memory module with the socket that notches of memory module must match the socket keys for a correct installation.
3. Install the memory module into the socket and push it firmly down until it is fully seated. The socket latches are levered upwards and clipped on to the edges of the DIMM.
4. Install any remaining DIMM modules.



12. AMI BIOS Utility

This chapter provides users with detailed description how to set up basic system configuration through the AMIBIOS8 BIOS setup utility.

12.1. Starting

To enter the setup screens, follow the steps below:

1. Turn on the computer and press the <Del> key immediately.
2. After you press the <Delete> key, the main BIOS setup menu displays. You can access the other setup screens from the main BIOS setup menu, such as the Chipset and Power menus.

12.2. Navigation Keys

The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process.

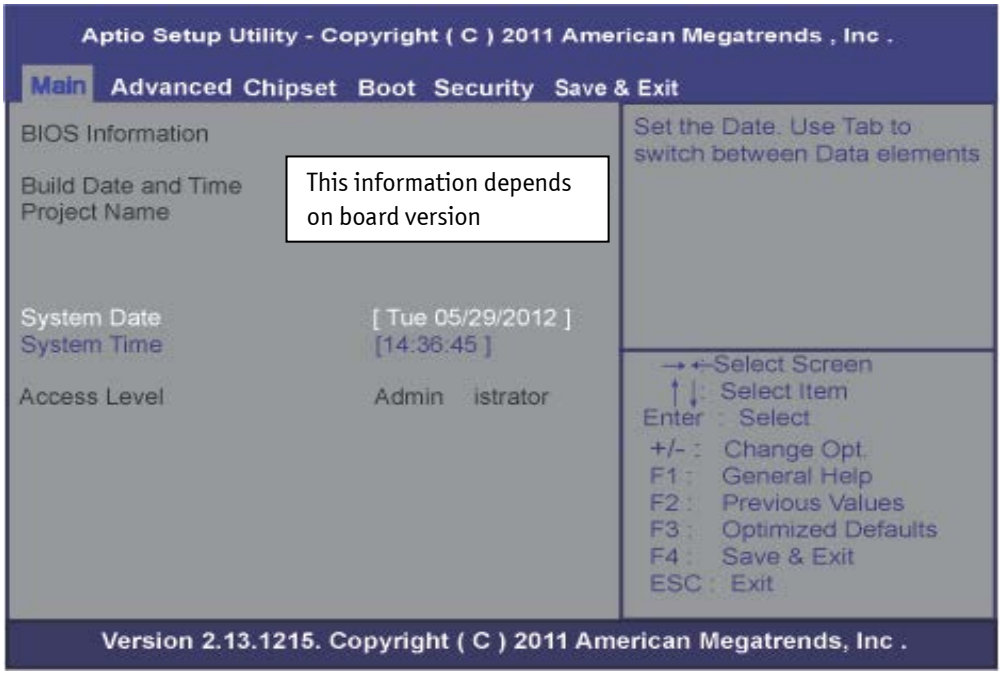
These keys include <F1>, <F10>, <Enter>, <ESC>, <Arrow> keys, and so on.

☞ Some of navigation keys differ from one screen to another.

← Left/Right	The Left <Arrow> keys allow you to select a setup screen.
↑↓ Up/Down	The Up and Down <Arrow> keys allow you to select a setup screen or sub-screen.
+– Plus/Minus	The Plus and Minus <Arrow> keys allow you to change the field value of a particular setup item.
Tab	The <Tab> key allows you to select setup fields.
F1	The <F1> key allows you to display the General Help screen.
F2	The <F2> key allows you to Load Previous Values.
F3	The <F3> key allows you to Load Optimized Defaults.
F4	The <F4> key allows you to save any changes you have made and exit Setup. Press the <F4> key to save your changes.
Esc	The <Esc> key allows you to discard any changes you have made and exit the Setup. Press the <Esc> key to exit the setup without saving your changes.
Enter	The <Enter> key allows you to display or change the setup option listed for a particular setup item. The <Enter> key can also allow you to display the setup sub- screens.

12.3. Main Menu

When you first enter the Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab. There are two Main Setup options. They are described in this section. The Main BIOS Setup screen is shown below.


Aptio Setup Utility - Copyright (C) 2011 American Megatrends , Inc .
Main Advanced Chipset Boot Security Save & Exit
BIOS Information
Build Date and Time
Project Name
This information depends on board version
System Date [Tue 05/29/2012]
System Time [14:36:45]
Access Level Admin istrator
Set the Date. Use Tab to switch between Data elements
→←Select Screen
↑↓: Select Item
Enter : Select
+/- : Change Opt.
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save & Exit
ESC : Exit
Version 2.13.1215. Copyright (C) 2011 American Megatrends, Inc .

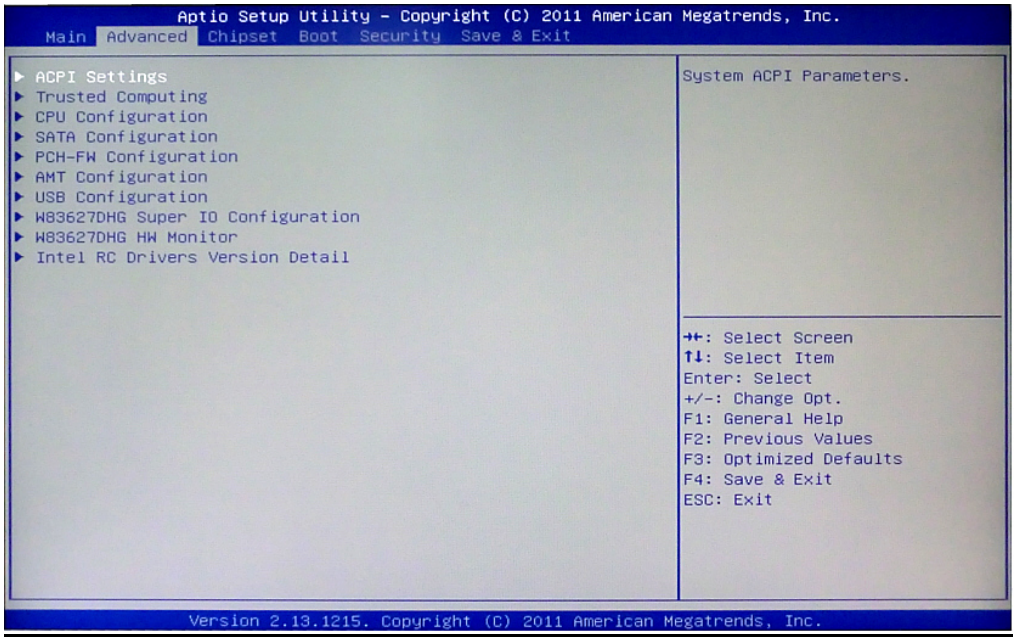
- **System Date/Time**

  Use this options to change the system date and time. Highlight System Date or System Time using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Enter> keys to move between fields. The date must be entered in MM/DD/YY format. The time is entered in HH:MM:SS format.

12.4. Advanced Menu

The Advanced menu also allows users to set configuration of the CPU and other system devices. You can select any of the items in the left frame of the screen to go to the sub menus (refer to picture below).

For items marked with "▶", please press <Enter> for more options.

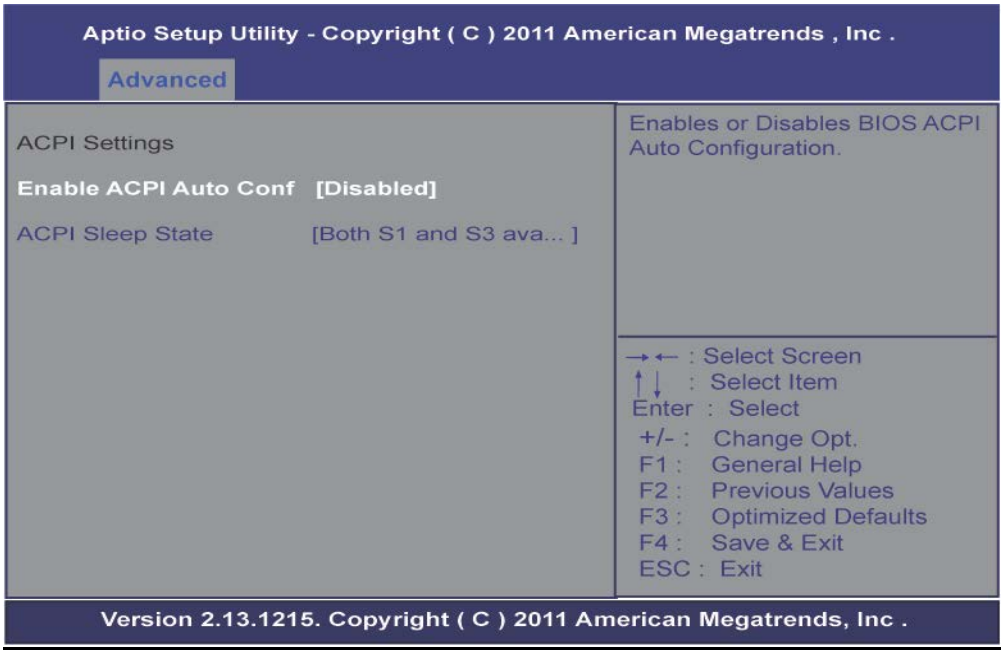

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
▶ ACPI Settings
▶ Trusted Computing
▶ CPU Configuration
▶ SATA Configuration
▶ PCH-FW Configuration
▶ AMT Configuration
▶ USB Configuration
▶ W83627DHG Super IO Configuration
▶ W83627DHG HW Monitor
▶ Intel RC Drivers Version Detail
System ACPI Parameters.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.13.1215. Copyright (C) 2011 American Megatrends, Inc.

Important

Setting incorrect field values may cause the system to malfunction.

12.4.1. ACPI Settings

You can use this screen to select options for the ACPI Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.

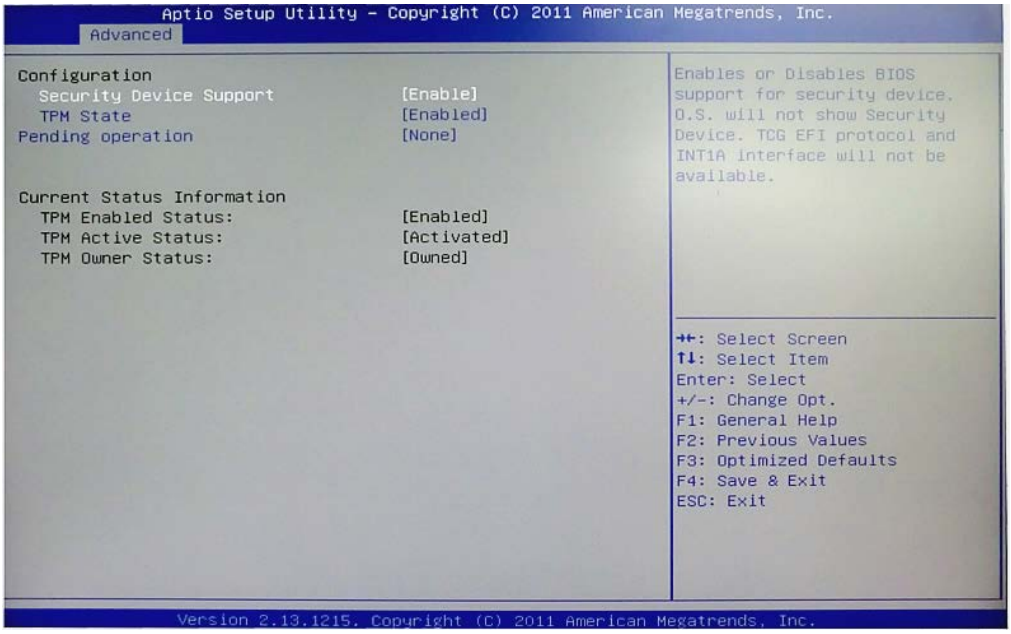

Aptio Setup Utility - Copyright (C) 2011 American Megatrends , Inc .
Advanced
ACPI Settings
Enable ACPI Auto Conf [Disabled]
ACPI Sleep State [Both S1 and S3 ava...]
Enables or Disables BIOS ACPI Auto Configuration.
→← : Select Screen
↑↓ : Select Item
Enter : Select
+/- : Change Opt.
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save & Exit
ESC : Exit
Version 2.13.1215. Copyright (C) 2011 American Megatrends, Inc .

- **ACPI Sleep State**

  Allows you to select the Advanced Configuration and Power Interface (ACPI) state to be used for system suspend. Here are the options for your selection, S1 (CPU Stop Clock), S3 (Suspend to RAM) and Suspend Disable.

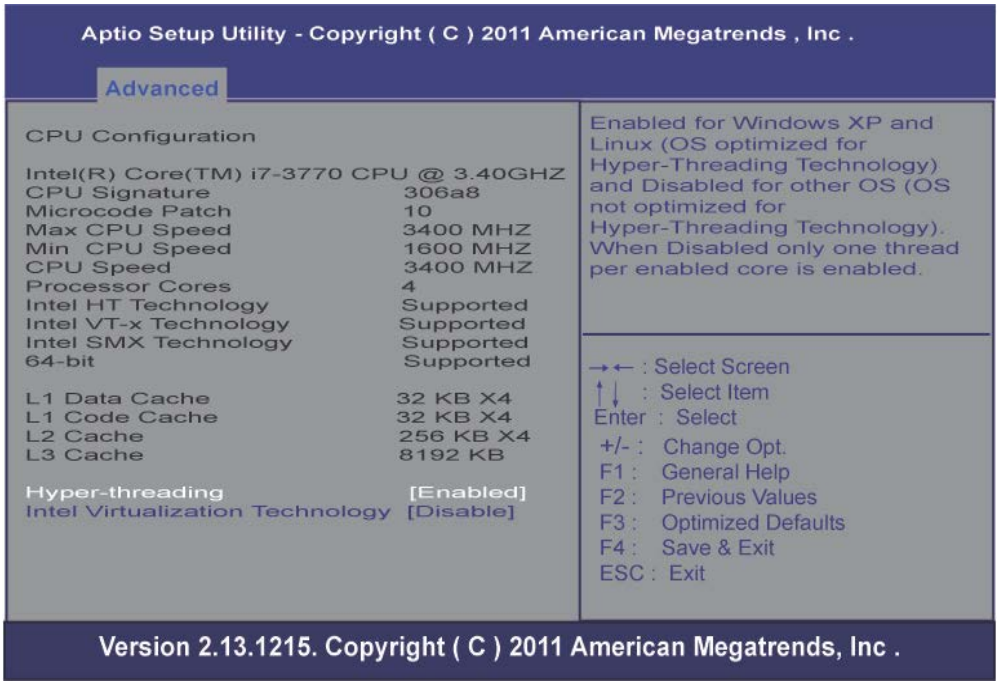
12.4.2. Trusted Computing

You can use this screen to select options for the Trusted Computing, and change the value of the selected option. A description of the selected item appears on the right side of the screen.


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
Configuration
Security Device Support [Enable]
TPM State [Enabled]
Pending operation [None]
Current Status Information
TPM Enabled Status: [Enabled]
TPM Active Status: [Activated]
TPM Owner Status: [Owned]
Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.13.1215. Copyright (C) 2011 American Megatrends, Inc.

12.4.3. CPU Configuration

This screen shows the CPU Configuration, and you can change the value of the selected option.

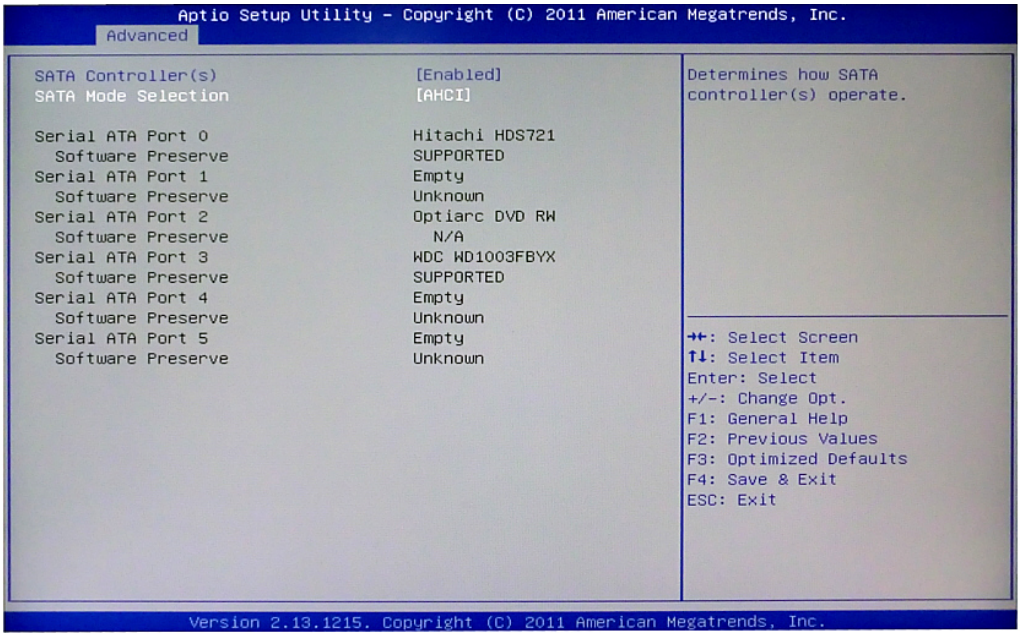

Aptio Setup Utility - Copyright (C) 2011 American Megatrends , Inc .
Advanced
CPU Configuration
Intel(R) Core(TM) i7-3770 CPU @ 3.40GHZ
CPU Signature 306a8
Microcode Patch 10
Max CPU Speed 3400 MHZ
Min CPU Speed 1600 MHZ
CPU Speed 3400 MHZ
Processor Cores 4
Intel HT Technology Supported
Intel VT-x Technology Supported
Intel SMX Technology Supported
64-bit Supported
L1 Data Cache 32 KB X4
L1 Code Cache 32 KB X4
L2 Cache 256 KB X4
L3 Cache 8192 KB
Hyper-threading [Enabled]
Intel Virtualization Technology [Disable]
Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology). When Disabled only one thread per enabled core is enabled.
→← : Select Screen
↑↓ : Select Item
Enter : Select
+/- : Change Opt.
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save & Exit
ESC : Exit
Version 2.13.1215. Copyright (C) 2011 American Megatrends, Inc .

- **Hyper-threading**
  This item can set enable or disable for support Hyper-threading Technology.

- **Intel Virtualization Technology**
  Allows a hardware platform to run multiple operating systems separately and simultaneously, enabling one system to virtually function as several systems.

12.4.4. SATA Configuration

You can use this screen to select options for the SATA Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.

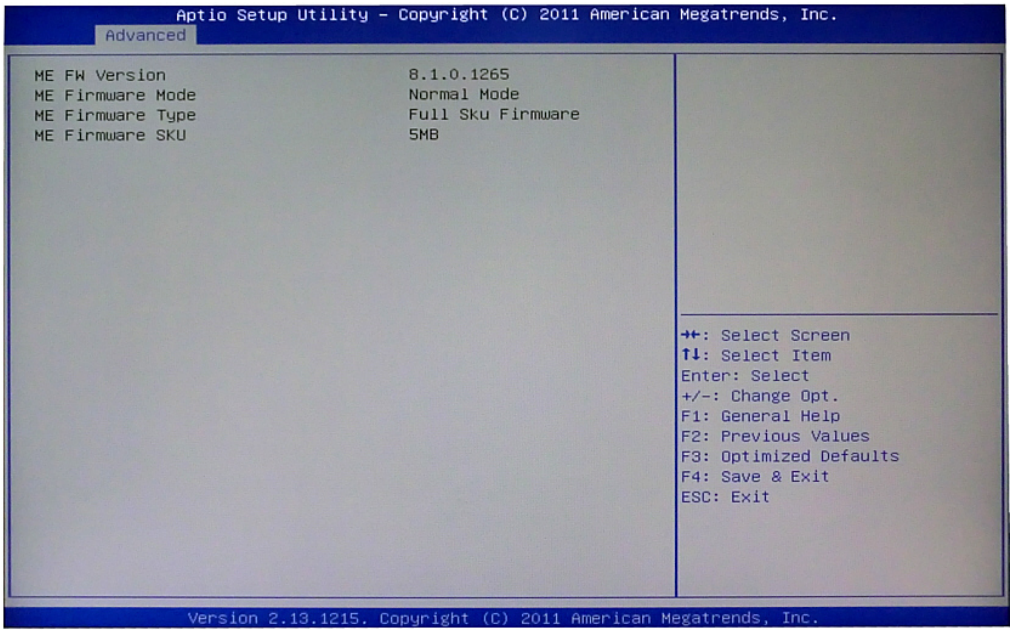

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
SATA Controller(s) [Enabled]
SATA Mode Selection [AHCI]
Serial ATA Port 0 Hitachi HDS721
Software Preserve SUPPORTED
Serial ATA Port 1 Empty
Software Preserve Unknown
Serial ATA Port 2 Optiarc DVD RW
Software Preserve N/A
Serial ATA Port 3 WDC WD1003FBYX
Software Preserve SUPPORTED
Serial ATA Port 4 Empty
Software Preserve Unknown
Serial ATA Port 5 Empty
Software Preserve Unknown
Determines how SATA controller(s) operate.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.13.1215. Copyright (C) 2011 American Megatrends, Inc.

- **SATA Mode**

  Use this item to choose the SATA operation mode. Here are the options for your selection, IDE Mode, AHCI Mode and RAID Mode.

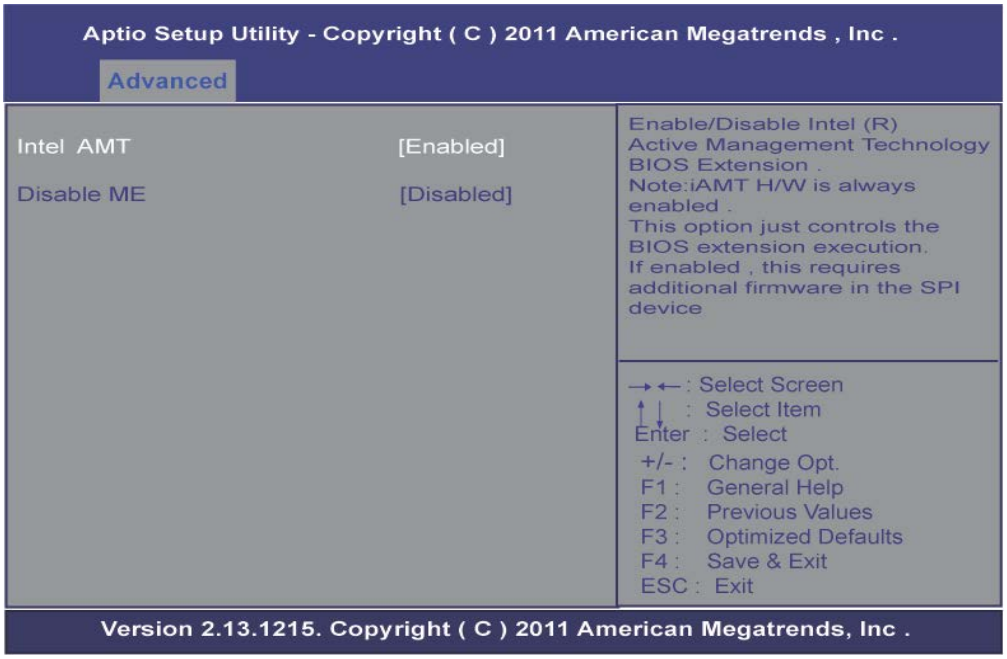
12.4.5. PCH-FW Configuration

This screen displays information about the ME firmware.



12.4.6. AMT Configuration

You can use this screen to select options for the Intel AMT Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.

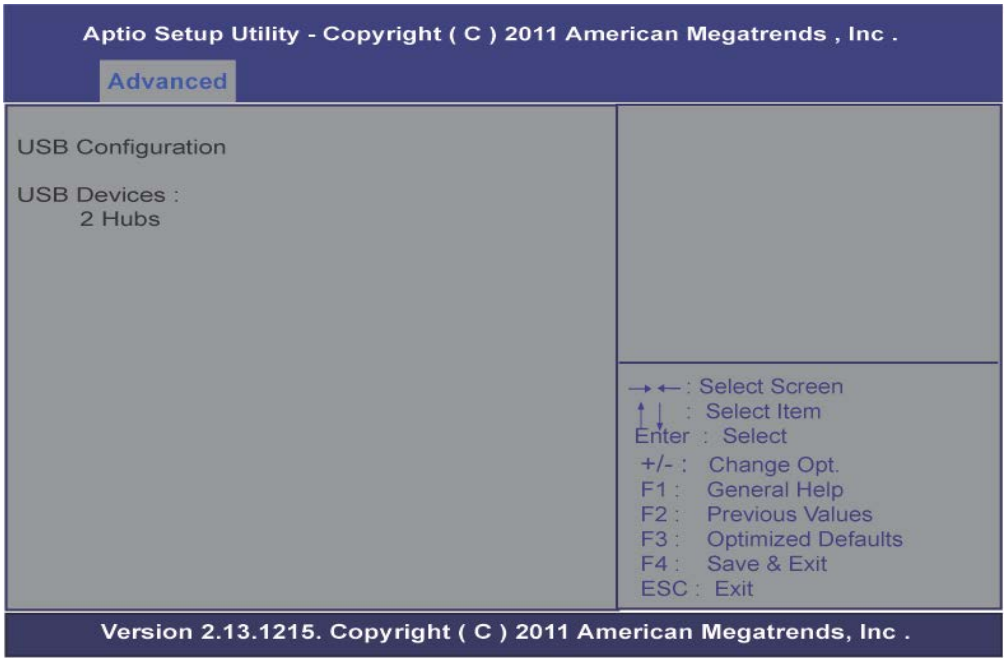

Aptio Setup Utility - Copyright (C) 2011 American Megatrends , Inc .
Advanced
Intel AMT [Enabled]
Disable ME [Disabled]
Enable/Disable Intel (R) Active Management Technology BIOS Extension .
Note:iAMT H/W is always enabled .
This option just controls the BIOS extension execution.
If enabled , this requires additional firmware in the SPI device
→←: Select Screen
↑↓ : Select Item
Enter : Select
+/- : Change Opt.
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save & Exit
ESC : Exit
Version 2.13.1215. Copyright (C) 2011 American Megatrends, Inc .

- **INTEL AMT**
  You can enable this item to support AMT (active management technology) function to follow up the procedure for the access to AMI program screen.

- **Disable ME**
  Use this item to unconfigure the ME settings.

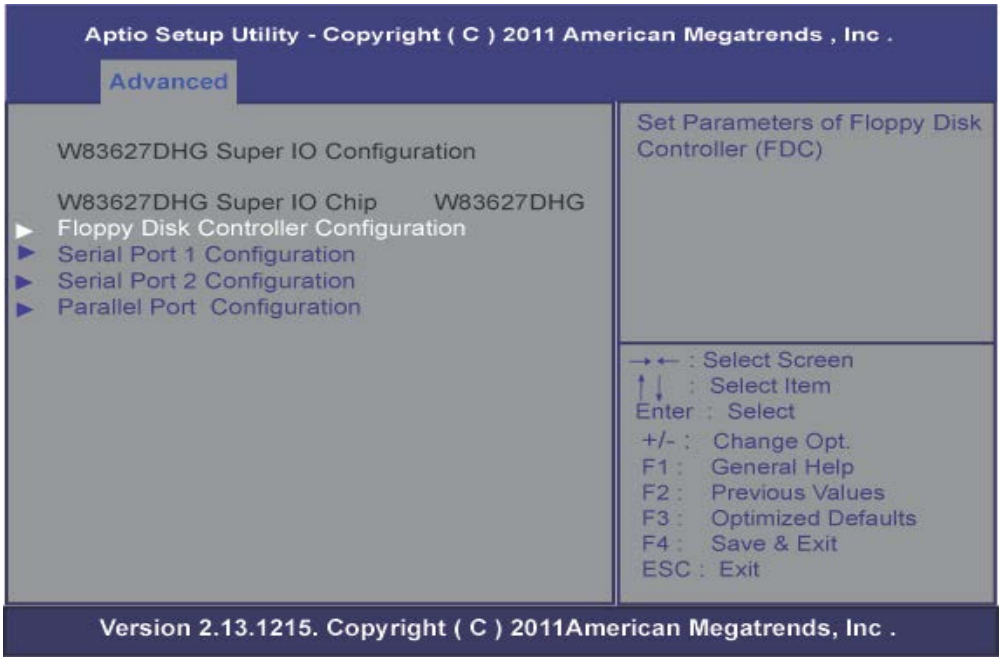
12.4.7. USB Configuration

You can use this screen to select options for the USB Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.


Aptio Setup Utility - Copyright (C) 2011 American Megatrends , Inc .
Advanced
USB Configuration
USB Devices :
2 Hubs
→←: Select Screen
↑↓ : Select Item
Enter : Select
+/- : Change Opt.
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save & Exit
ESC : Exit
Version 2.13.1215. Copyright (C) 2011 American Megatrends, Inc .

12.4.8. Super IO Configuration

You can use this screen to select options for the Super IO Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen. For items marked with "►", please press <Enter> for more options.


Aptio Setup Utility - Copyright (C) 2011 American Megatrends , Inc .
Advanced
W83627DHG Super IO Configuration
W83627DHG Super IO Chip W83627DHG
► Floppy Disk Controller Configuration
► Serial Port 1 Configuration
► Serial Port 2 Configuration
► Parallel Port Configuration
Set Parameters of Floppy Disk Controller (FDC)
→← : Select Screen
↑↓ : Select Item
Enter : Select
+/- : Change Opt.
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save & Exit
ESC : Exit
Version 2.13.1215. Copyright (C) 2011American Megatrends, Inc .

- **Floppy Disk Controller Configuration**
  You can use this screen to select options for the Floppy Configuration, and change the value of the selected option.

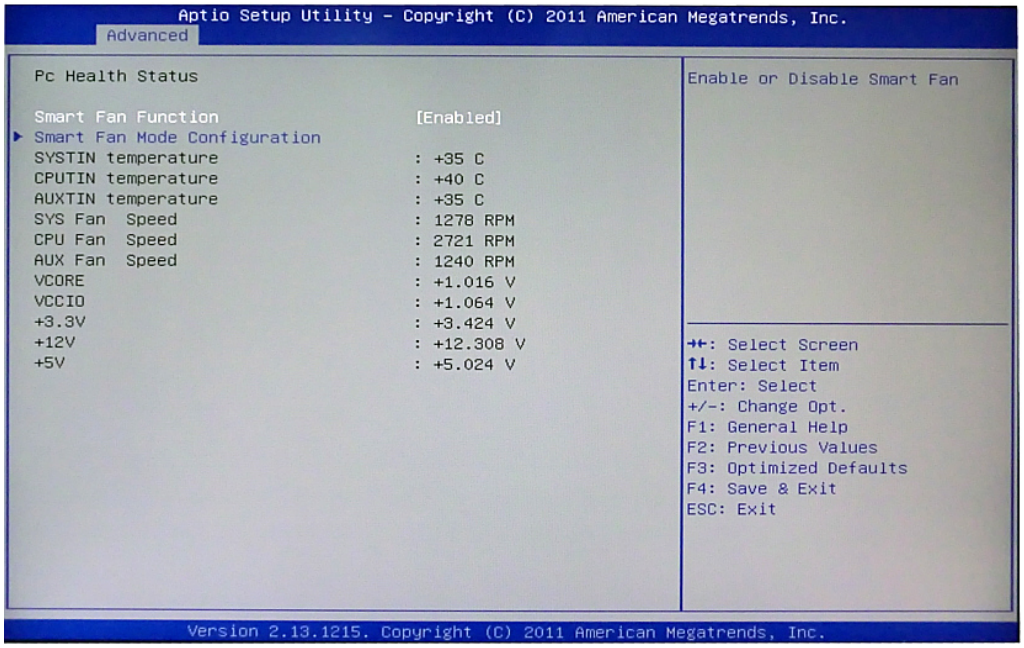
- **Serial Port 1 Configuration**
  This option specifies the base I/O port address and Interrupt Request address of serial port 1. The Optimal setting is 2F8/IRQ3.

- **Serial Port 2 Configuration**
  This option specifies the base I/O port address and Interrupt Request address of serial port 1. The Optimal setting is 3F8/IRQ4.

- **Parallel Port Configuration**
  This item allows you to determine the Parallel Port Mode and I/O address for onboard parallel port.

12.4.9. H/W Monitor

This screen shows the Hardware Health Configuration, and a description of the selected item appears on the right side of the screen.


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
Pc Health Status
Smart Fan Function [Enabled]
Smart Fan Mode Configuration
SYSTIN temperature : +35 C
CPUTIN temperature : +40 C
AUXTIN temperature : +35 C
SYS Fan Speed : 1278 RPM
CPU Fan Speed : 2721 RPM
AUX Fan Speed : 1240 RPM
VCORE : +1.016 V
VCCIO : +1.064 V
+3.3V : +3.424 V
+12V : +12.308 V
+5V : +5.024 V
Enable or Disable Smart Fan
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.13.1215. Copyright (C) 2011 American Megatrends, Inc.

- **Smart Fan Function**

  This item can enable or disable the Smart Fan function.

- **Smart Fan Mode Configuration**

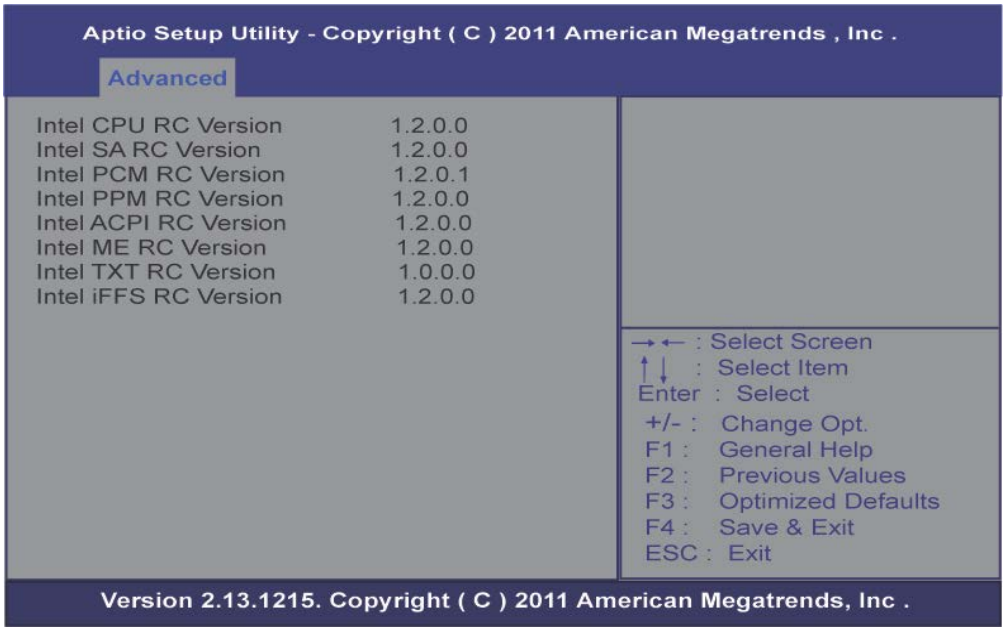
  This item can adjust the CPU/System/Auxiliary Fan speed automatically in accordance with the current CPU/System temperature that can prevent the system overheating.

  The Auxiliary Fan also in accordance with current CPU temperature.

  There are these options Manual Mode and Thermal Cruise Mode.

12.4.10. Intel RC Drivers Version Detail

This screen shows the version numbers of the Intel RC drivers.

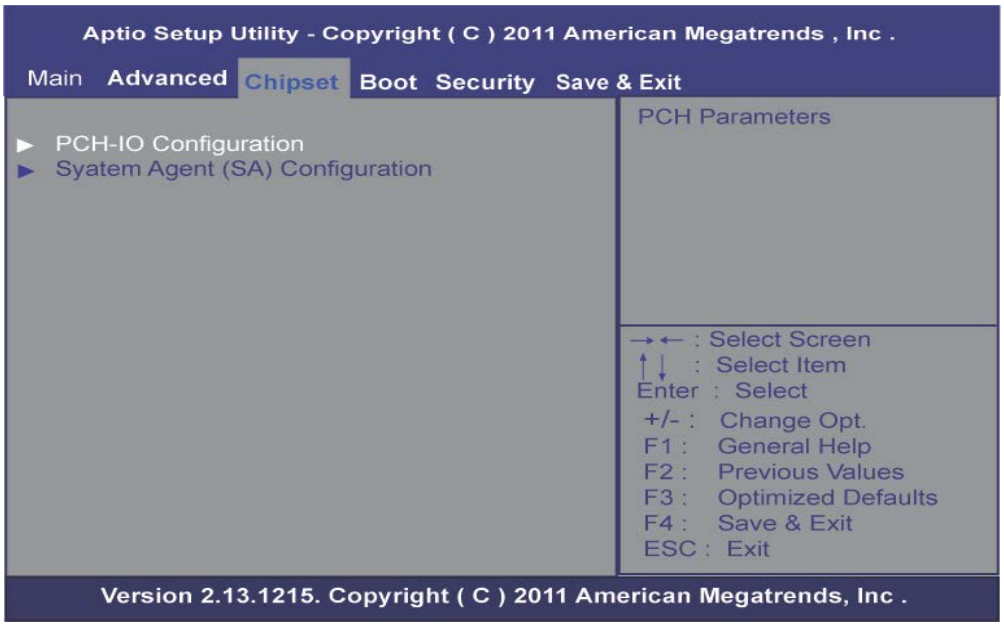

Aptio Setup Utility - Copyright (C) 2011 American Megatrends , Inc .
Advanced
Intel CPU RC Version 1.2.0.0
Intel SA RC Version 1.2.0.0
Intel PCM RC Version 1.2.0.1
Intel PPM RC Version 1.2.0.0
Intel ACPI RC Version 1.2.0.0
Intel ME RC Version 1.2.0.0
Intel TXT RC Version 1.0.0.0
Intel iFFS RC Version 1.2.0.0
→← : Select Screen
↑↓ : Select Item
Enter : Select
+/- : Change Opt.
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save & Exit
ESC : Exit
Version 2.13.1215. Copyright (C) 2011 American Megatrends, Inc .

12.5. Chipset Menu

The Chipset menu allows users to change the advanced chipset settings. You can select any of the items in the left frame of the screen to go to the sub menus:

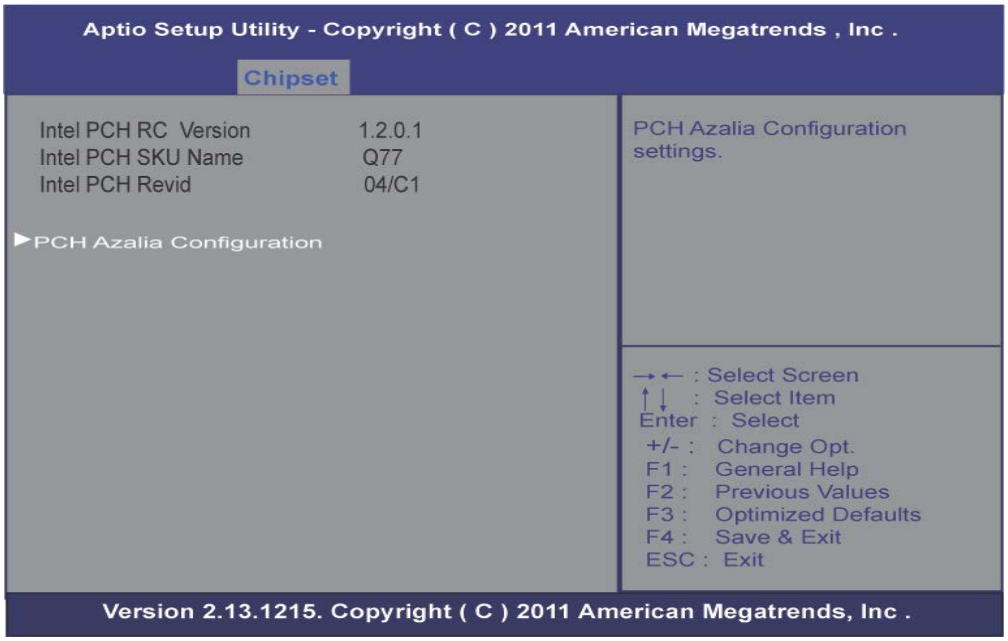
- **PCH-IO Configuration**
- **System Agent (SA) Configuration**

For items marked with "►", please press <Enter> for more options.


Aptio Setup Utility - Copyright (C) 2011 American Megatrends , Inc .
Main Advanced Chipset Boot Security Save & Exit
► PCH-IO Configuration
► Syatem Agent (SA) Configuration
PCH Parameters
→← : Select Screen
↑↓ : Select Item
Enter : Select
+/- : Change Opt.
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save & Exit
ESC : Exit
Version 2.13.1215. Copyright (C) 2011 American Megatrends, Inc .

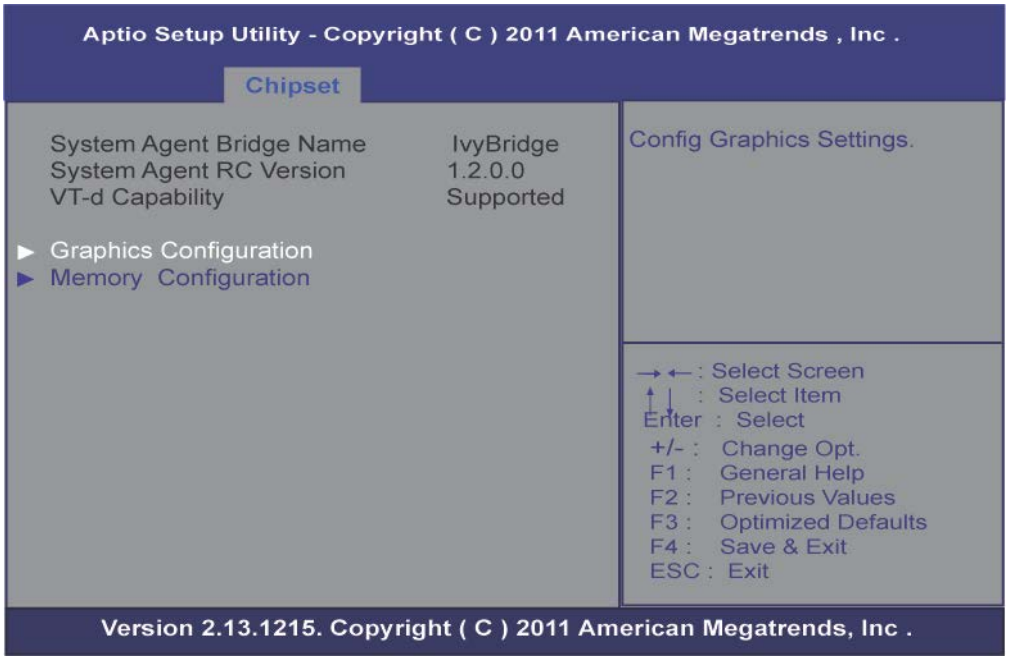
12.5.1. PCH-IO Configuration

This screen shows the PCH Azalia Audio Interface Configuration, and a description of the selected item appears on the right side of the screen.


Aptio Setup Utility - Copyright (C) 2011 American Megatrends , Inc .
Chipset
Intel PCH RC Version 1.2.0.1
Intel PCH SKU Name Q77
Intel PCH Revid 04/C1
PCH Azalia Configuration
PCH Azalia Configuration settings.
→← : Select Screen
↑↓ : Select Item
Enter : Select
+/- : Change Opt.
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save & Exit
ESC : Exit
Version 2.13.1215. Copyright (C) 2011 American Megatrends, Inc .

12.5.2. System Agent (SA) Configuration

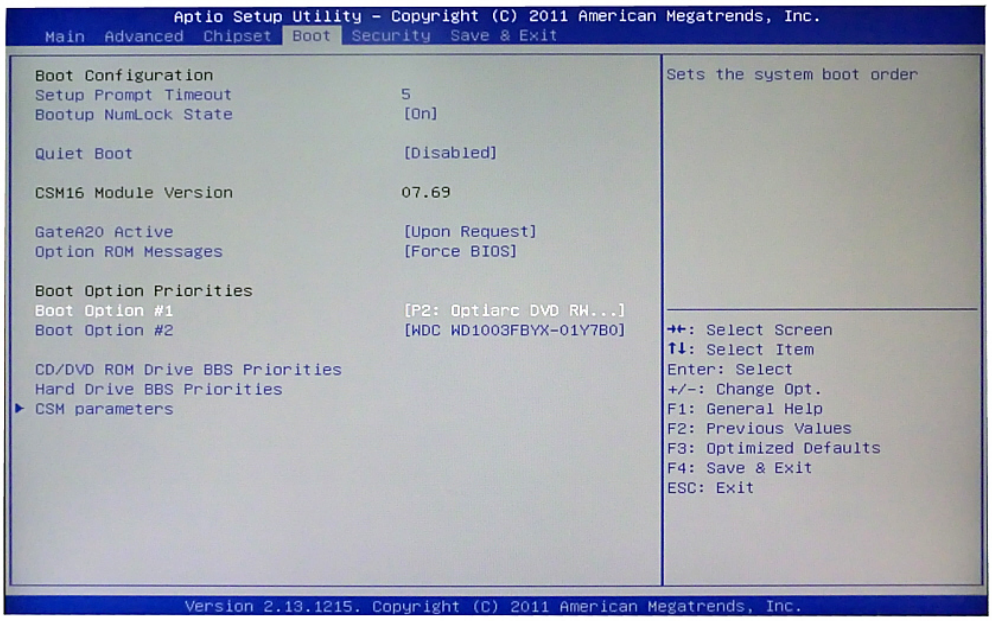
It is strongly recommended that you do not modify these options unless you are an advanced user.


Aptio Setup Utility - Copyright (C) 2011 American Megatrends , Inc .
Chipset
System Agent Bridge Name IvyBridge
System Agent RC Version 1.2.0.0
VT-d Capability Supported
Graphics Configuration
Memory Configuration
Config Graphics Settings.
→ ← : Select Screen
↑ ↓ : Select Item
Enter : Select
+/- : Change Opt.
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save & Exit
ESC : Exit
Version 2.13.1215. Copyright (C) 2011 American Megatrends, Inc .

Boot Menu

The Boot menu allows users to change boot options of the system. You can select any of the items in the left frame of the screen to go to the sub menus:

- **Setup Prompt Timeout**
- **Bootup NumLock State**
- **Quiet Boot**
- **CSM16 Module Verison**
- **GateA20 Active**
- **Boot Option Priorities**


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Boot Configuration
Setup Prompt Timeout 5
Bootup NumLock State [On]
Quiet Boot [Disabled]
CSM16 Module Version 07.69
GateA20 Active [Upon Request]
Option ROM Messages [Force BIOS]
Boot Option Priorities
Boot Option #1 [P2: Optiarc DVD RW...]
Boot Option #2 [WDC WD1003FBYX-01Y7B0]
CD/DVD ROM Drive BBS Priorities
Hard Drive BBS Priorities
CSM parameters
Sets the system boot order
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.13.1215. Copyright (C) 2011 American Megatrends, Inc.

Quiet Boot

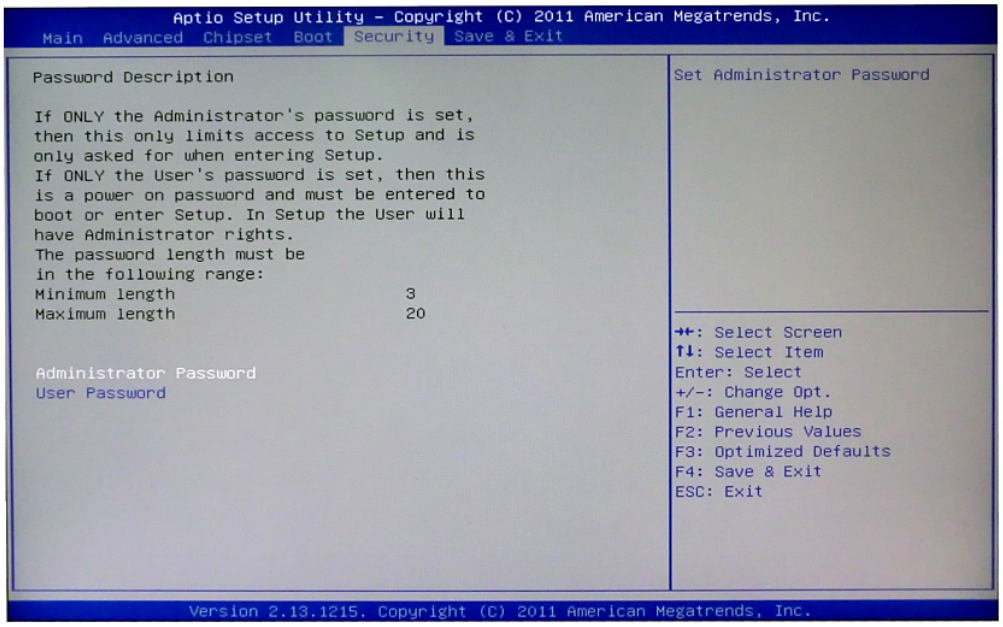
Use this item to enable or disable the Quite Boot state. The default setting is disabling.

Bootup NumLock State

Use this item to select the power-on state for the NumLock. The default setting is on.

12.6. Security Menu

The Security menu allows users to change the security settings for the system.

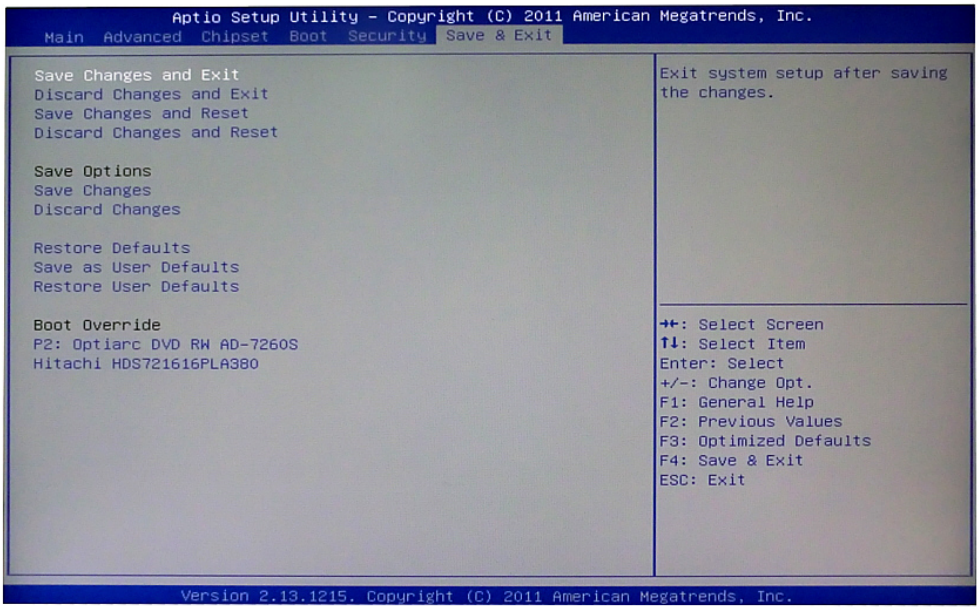

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Password Description
If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup.
If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights.
The password length must be in the following range:
Minimum length 3
Maximum length 20
Administrator Password
User Password
Set Administrator Password
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.13.1215. Copyright (C) 2011 American Megatrends, Inc.

- **Administrator Password**
  This item indicates whether an administrator password has been set. If the password has been installed, Installed displays. If not, Not Installed displays.

- **User Password**
  This item indicates whether a user password has been set. If the password has been installed, Installed displays. If not, Not Installed displays.

12.7. Save & Exit Menu

The Save & Exit menu allows users to load your system configuration with optimal or failsafe default values .



- **Save Changes and Exit**
  When you have completed the system configuration changes, select this option to leave Setup and return to Main Menu. Select *Save Changes and Exit* from the Save & Exit menu and press <Enter>. Select Yes to save changes and exit.

- **Discard Changes and Exit**
  Select this option to quit Setup without making any permanent changes to the system configuration and return to Main Menu. Select Discard Changes and Exit from the Save & Exit menu and press <Enter>. Select Yes to discard changes and exit.

- **Save Changes and Reset**
  When you have completed the system configuration changes, select this option to leave Setup and reboot the computer so the new system configuration parameters can take effect. Select *Save Changes and Reset* from the Save & Exit menu and press <Enter>. Select Yes to save changes and reset.

- **Discard Changes and Reset**
  Select this option to quit Setup without making any permanent changes to the system configuration and reboot the computer. Select Discard Changes and Reset from the Save & Exit menu and press <Enter>. Select Yes to discard changes and reset.

- **Save Changes**
  When you have completed the system configuration changes, select this option to save changes. Select Save Changes from the Save & Exit menu and press <Enter>. Select Yes to save changes.

- **Discard Changes**
  Select this option to quit Setup without making any permanent changes to the system configuration. Select Discard Changes from the Save & Exit menu and press <Enter>. Select Yes to discard changes.

- **Restore Defaults**

  It automatically sets all Setup options to a complete set of default settings when you select this option. The Optimal settings are designed for maximum system performance, but may not work best for all computer applications. In particular, do not use the Optimal Setup options if your computer is experiencing system configuration problems. Select Restore Defaults from the save & Exit menu and press <Enter>.

13. Watchdog Timer

13.1. Watchdog Timer Setting

After the system stops working for a while, it can be auto-reset by the Watchdog Timer. The integrated Watchdog Timer can be set up in the system reset mode by program.

Using the Watchdog Function

Start

↓

Un-Lock WDT

:O 2E 87 ; Un-lock super I/O

O 2E 87 ; Un-lock super I/O

↓

Set WDT Function

O 2E 2D

O 2F 20

Select Logic device

O 2E 07

O 2F 08

↓

Activate WDT

:O 2E 30

O 2F 01

Set Second or Minute

O 2E F5

O 2F N N=00 or 08(See below table)

↓

Set base timer

:O 2E F6

O 2F M=00, 01, 02 FF(Hex) ,Value=0 to 255

↓

WDT counting

re-set timer :O 2E F6

O 2F M ; M=00,01,02,...FF(See below table)

↓

IF No re-set timer : WDT time-out, generate RESET

IF to disable WDT : O 2E 30

O 2F 00; Can be disable at any time

N=00

M= 00h: Time-out Disable

01h: Time-out occurs after 1 second

02h: Time-out occurs after 2 second

03h: Time-out occurs after 3 second

.....

FFh: Time-out occurs after 255 second

N=08

M= 00h: Time-out Disable

01h: Time-out occurs after 1 minute

02h: Time-out occurs after 2 minutes

03h: Time-out occurs after 3 minutes

FFh: Time-out occurs after 255 minutes

14. PCI IRQ Routing

14.1. PICMG PCI IRQ Routing

Device	ID	Slot	Int
PCI Slot 0	31	0	BCDA
PCI Slot 1	30	1	CDAB
PCI Slot 2	29	2	DABC
PCI Slot 3	28	3	ABCD

15. Configuring SATA for RAID

15.1. Configuring SATA Hard Drive(s) for RAID Function (Controller: Intel® Q77)

Please follow up the steps below to configure SATA hard drive(s):

(1) Install SATA hard drive(s) in your system.

(2) Enter the BIOS Setup to configure SATA controller mode and boot sequence.

(3) Configure RAID by the RAID BIOS.

(4) Create a floppy disk for the SATA controller driver.

(5) Install the SATA controller driver during the OS installation.

Before you begin the SATA configuration, please prepare:

(a) Two SATA hard drives (to ensure optimal performance, it is recommended that you use two hard drives with identical model and capacity). If you do not want to create RAID with the SATA controller, you may prepare only one hard drive.

(b) An empty formatted floppy disk

(c) Windows XP setup disk

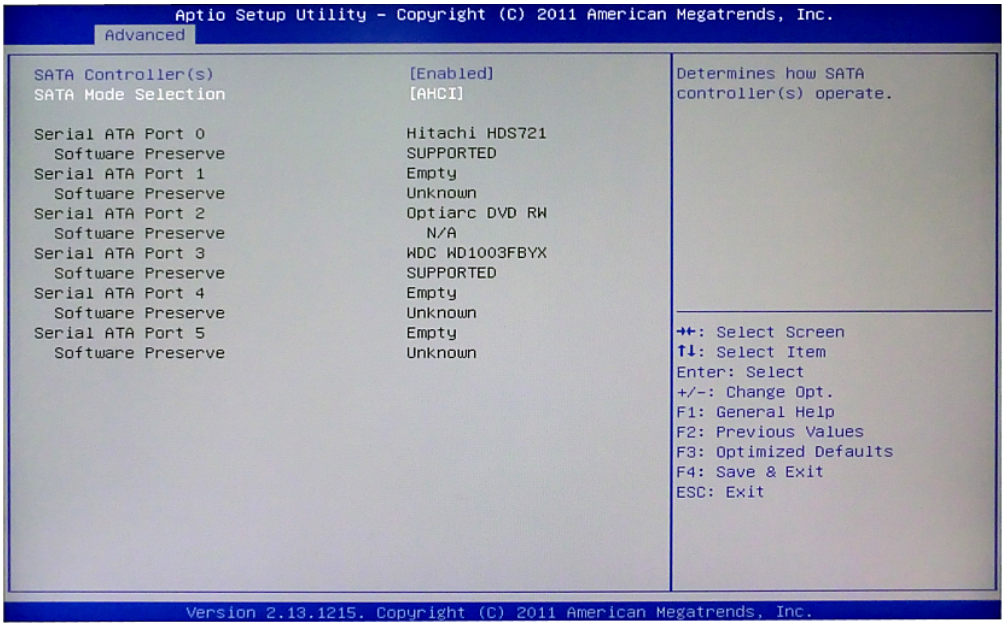
(1) Installing SATA hard drive(s) in your system

Connect one end of the SATA signal cable to the rear of the SATA hard drive, and the other end to available SATA port(s) on the board. Then, connect the power connector of power supply to the hard drive.

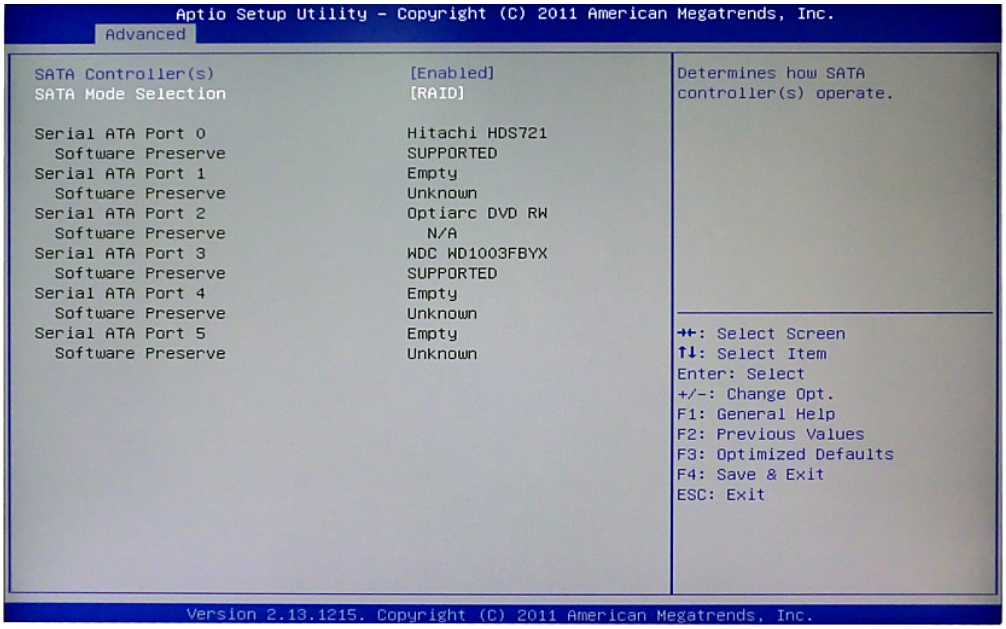
(2) Configuring SATA controller mode and boot sequence by the BIOS Setup

You have to make sure whether the SATA controller is configured correctly by system BIOS Setup and set up BIOS boot sequence for the SATA hard drive(s).

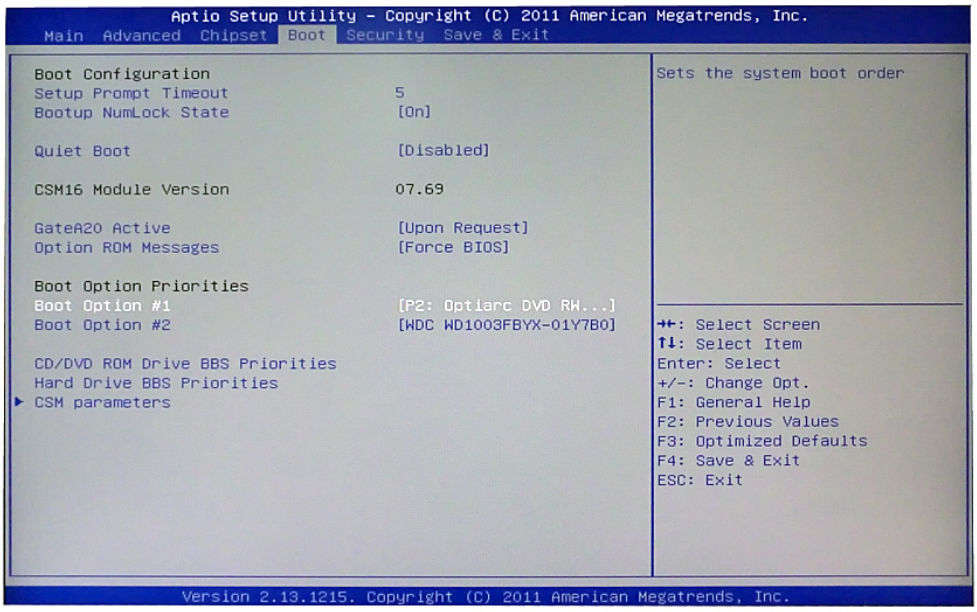
(2)-1-1 Turn on your system, and then press the Del button to enter BIOS Setup during running POST (Power-On Self Test). If you want to create RAID, just go to the Advanced Settings menu/IDE configuration, select the **Configure SATA#1 as**, and press <Enter> for more options.


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
SATA Controller(s) [Enabled]
SATA Mode Selection [AHCI]
Serial ATA Port 0 Hitachi HDS721
Software Preserve SUPPORTED
Serial ATA Port 1 Empty
Software Preserve Unknown
Serial ATA Port 2 Optiarc DVD RW
Software Preserve N/A
Serial ATA Port 3 WDC WD1003FBYX
Software Preserve SUPPORTED
Serial ATA Port 4 Empty
Software Preserve Unknown
Serial ATA Port 5 Empty
Software Preserve Unknown
Determines how SATA controller(s) operate.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.13.1215. Copyright (C) 2011 American Megatrends, Inc.

(2)-1-2 A list of options appears, please select **RAID.**


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
SATA Controller(s) [Enabled]
SATA Mode Selection [RAID]
Serial ATA Port 0 Hitachi HDS721
Software Preserve SUPPORTED
Serial ATA Port 1 Empty
Software Preserve Unknown
Serial ATA Port 2 Optiarc DVD RW
Software Preserve N/A
Serial ATA Port 3 WDC WD1003FBYX
Software Preserve SUPPORTED
Serial ATA Port 4 Empty
Software Preserve Unknown
Serial ATA Port 5 Empty
Software Preserve Unknown
Determines how SATA controller(s) operate.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.13.1215. Copyright (C) 2011 American Megatrends, Inc.

(2)-2 Set **CDROM** for **First Boot Device** under the **Boot Settings** menu to boot CD-ROM after system restarts.


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Boot Configuration
Setup Prompt Timeout 5
Bootup NumLock State [On]
Quiet Boot [Disabled]
CSM16 Module Version 07.69
GateA20 Active [Upon Request]
Option ROM Messages [Force BIOS]
Boot Option Priorities
Boot Option #1 [P2: Optiarc DVD RW...]
Boot Option #2 [WDC WD1003FBYX-01Y7B0]
CD/DVD ROM Drive BBS Priorities
Hard Drive BBS Priorities
CSM parameters
Sets the system boot order
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.13.1215. Copyright (C) 2011 American Megatrends, Inc.

(2)-3 Save and exit the BIOS Setup.

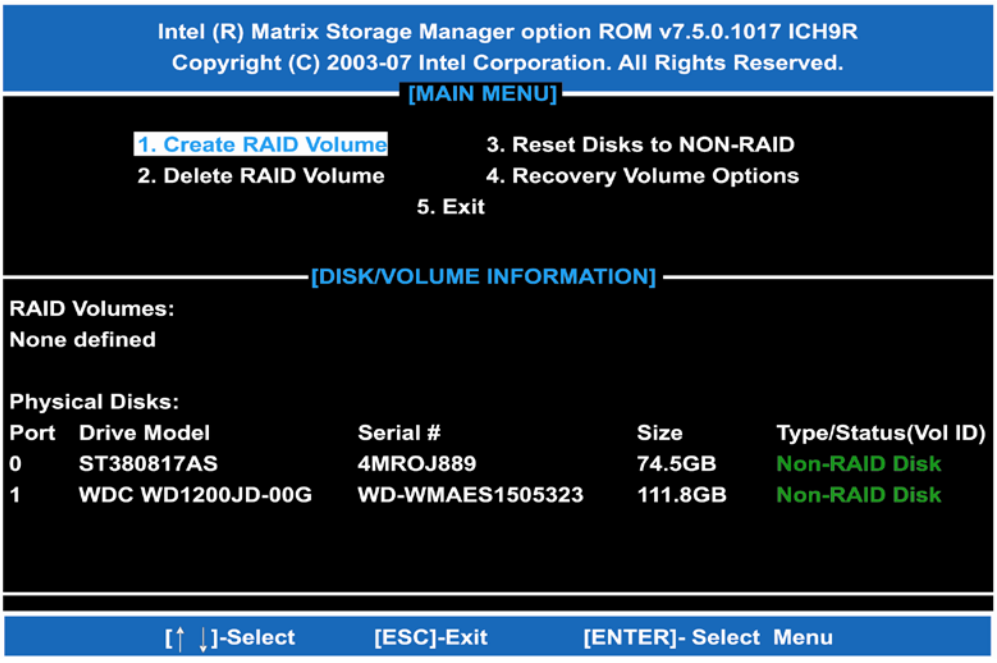
(3) Configuring RAID by the RAID BIOS

Enter the RAID BIOS setup utility to configure a RAID array. Skip this step and proceed to Section 4 if you do not want to create a RAID.

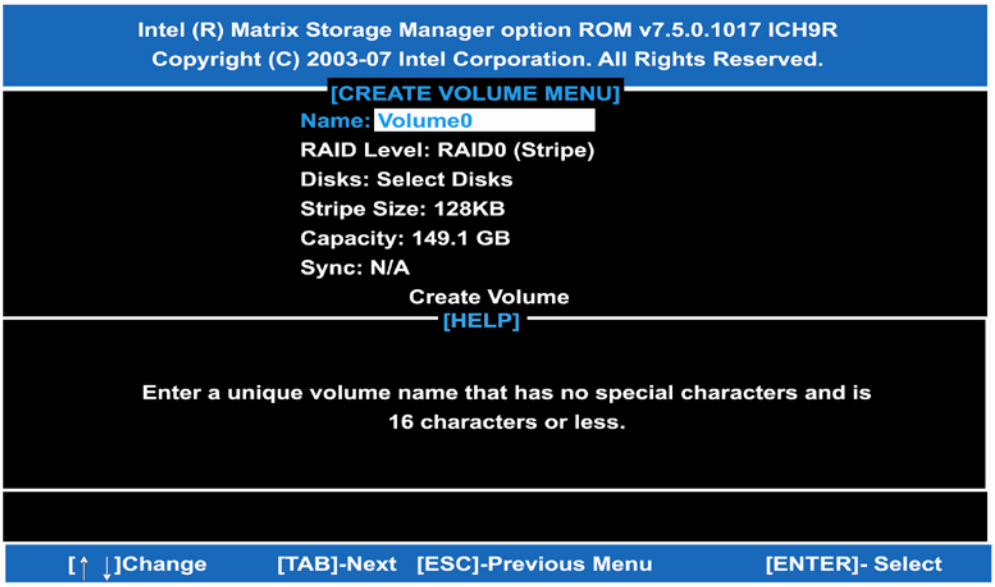
(3)-1 After the POST memory testing and before the operating system booting, a message "*Press <Ctrl-I> to enter Configuration Utility*" shows up, accordingly, press <CTRL+ I> to enter the RAID BIOS setup utility.

Intel (R) Matrix Storage Manager option ROM v7.5.0.1017 ICH9R
Copyright (C) 2003-07 Intel Corporation. All Rights Reserved.
RAID Volumes:
None defined
Physical Disks:
Port Drive Model Serial # Size Type/Status(Vol ID)
0 ST380817AS 4MR0J889 74.5GB Non-RAID Disk
1 WDC WD1200JD-00G WD-WMAES1505323 111.8GB Non-RAID Disk
Press <CTRL-I> to enter Configuration Utility...

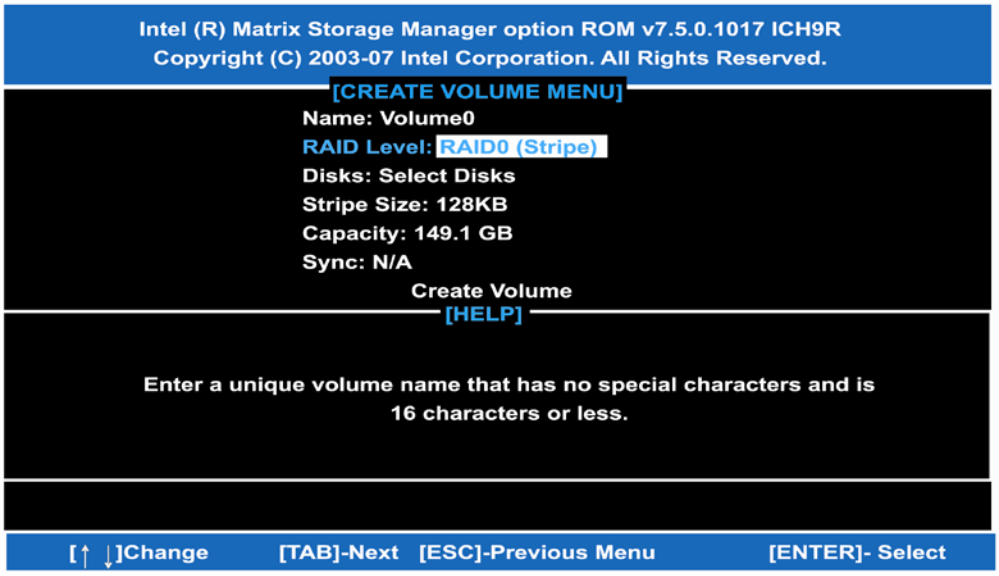
(3)-2 After you press <CTRL+ I>, the **Create RAID Volume** screen will appear. If you want to create a RAID array, select the **Create RAID Volume** option in the Main Menu and press ENTER**.**


Intel (R) Matrix Storage Manager option ROM v7.5.0.1017 ICH9R
Copyright (C) 2003-07 Intel Corporation. All Rights Reserved.
[MAIN MENU]
1. Create RAID Volume
2. Delete RAID Volume
3. Reset Disks to NON-RAID
4. Recovery Volume Options
5. Exit
[DISK/VOLUME INFORMATION]
RAID Volumes:
None defined
Physical Disks:
Port Drive Model Serial # Size Type/Status(Vol ID)
0 ST380817AS 4MROJ889 74.5GB Non-RAID Disk
1 WDC WD1200JD-00G WD-WMAES1505323 111.8GB Non-RAID Disk
[↑ ↓]-Select [ESC]-Exit [ENTER]- Select Menu

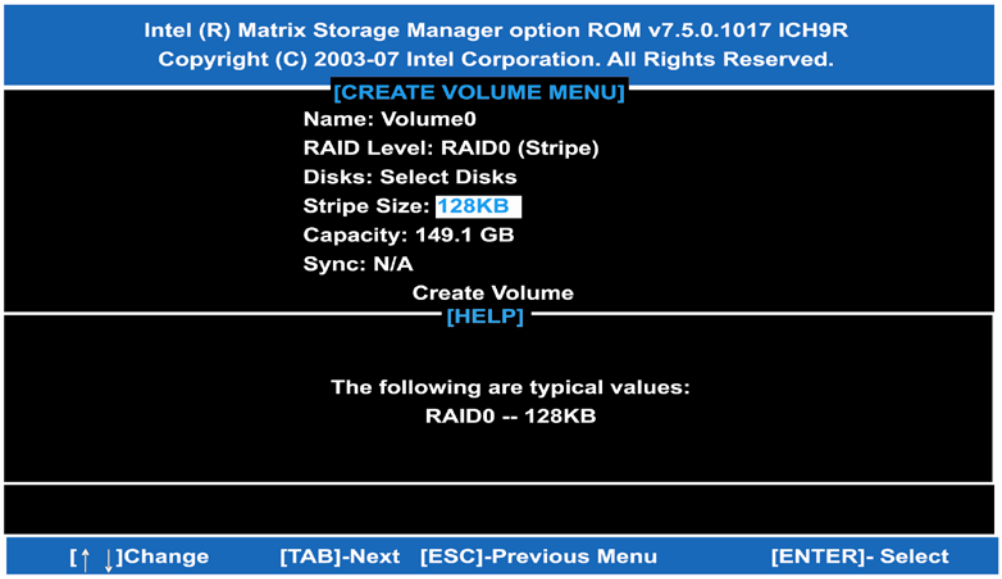
(3)-3-1 After entering the **CREATE VOLUME MENU** screen, you can type the disk array name with 1~16 letters (letters cannot be special characters) in the item "Name".


Intel (R) Matrix Storage Manager option ROM v7.5.0.1017 ICH9R
Copyright (C) 2003-07 Intel Corporation. All Rights Reserved.
[CREATE VOLUME MENU]
Name: Volume0
RAID Level: RAID0 (Stripe)
Disks: Select Disks
Stripe Size: 128KB
Capacity: 149.1 GB
Sync: N/A
Create Volume
[HELP]
Enter a unique volume name that has no special characters and is 16 characters or less.
[↑ ↓]Change [TAB]-Next [ESC]-Previous Menu [ENTER]- Select

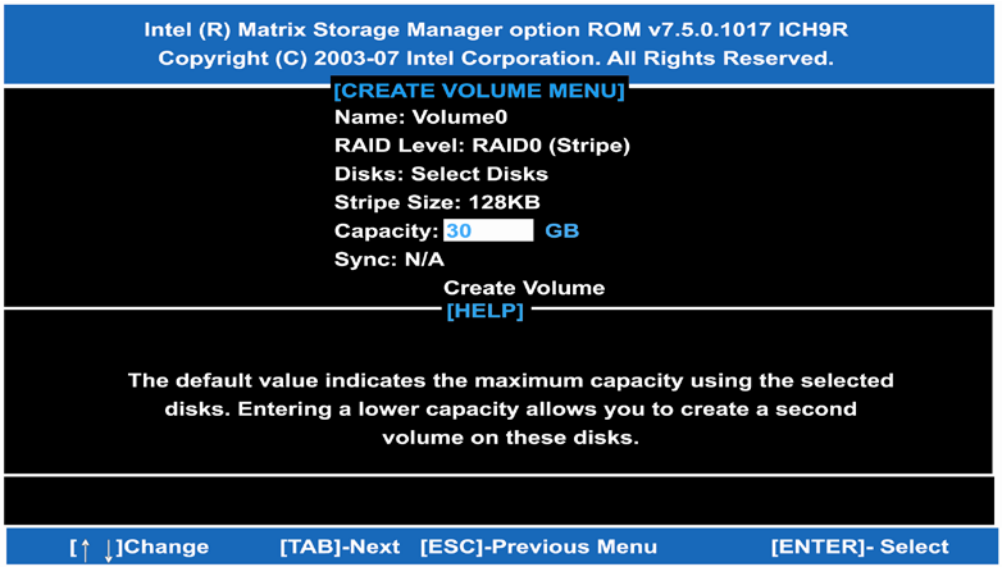
(3)-3-2 When finished, press ENTER to select a RAID level. There are three RAID levels, RAID0, RAID1 and RAID5 & RAID10. Select a RAID level and press ENTER.


Intel (R) Matrix Storage Manager option ROM v7.5.0.1017 ICH9R
Copyright (C) 2003-07 Intel Corporation. All Rights Reserved.
[CREATE VOLUME MENU]
Name: Volume0
RAID Level: RAID0 (Stripe)
Disks: Select Disks
Stripe Size: 128KB
Capacity: 149.1 GB
Sync: N/A
Create Volume
[HELP]
Enter a unique volume name that has no special characters and is 16 characters or less.
[↑ ↓]Change [TAB]-Next [ESC]-Previous Menu [ENTER]- Select

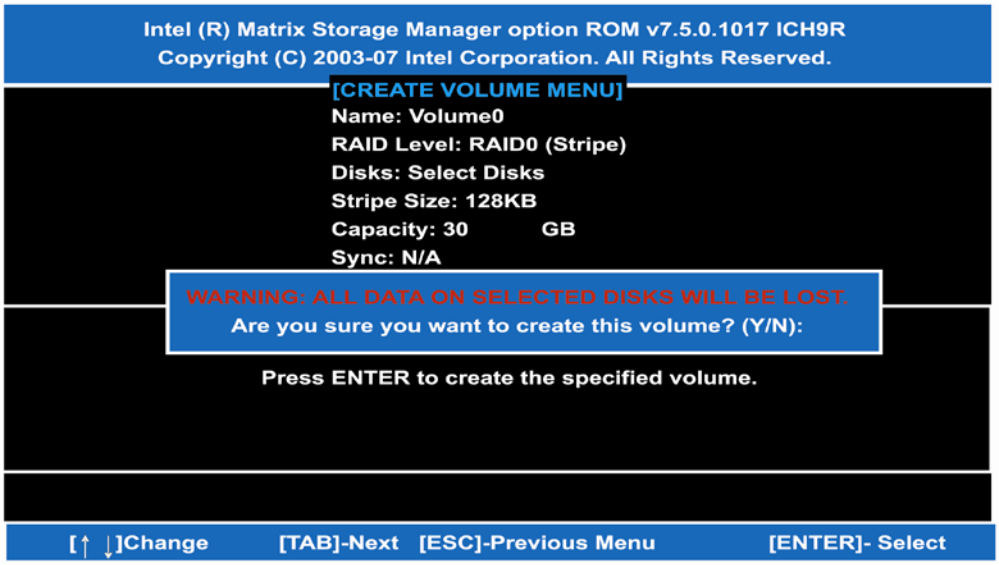
(3)-4 Set the stripe block size. The *KB* is the standard unit of stripe block size. The stripe block size can be 4KB to 128KB. After the setting, press ENTER for the array capacity.



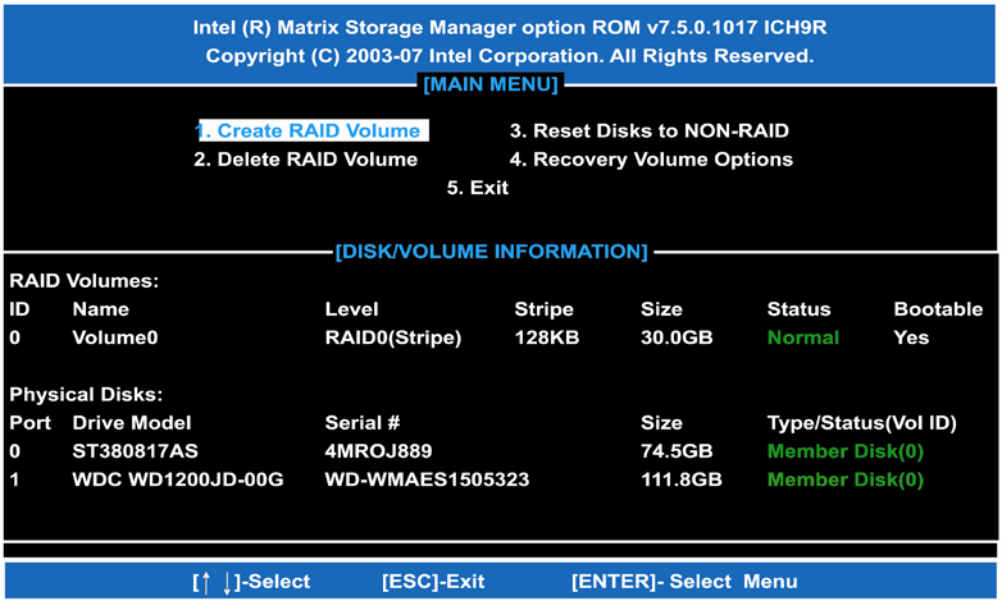
(3)-5 After setting all the items on the menu, select **Create Volume** and press ENTER to start creating the RAID array.


Intel (R) Matrix Storage Manager option ROM v7.5.0.1017 ICH9R
Copyright (C) 2003-07 Intel Corporation. All Rights Reserved.
[CREATE VOLUME MENU]
Name: Volume0
RAID Level: RAID0 (Stripe)
Disks: Select Disks
Stripe Size: 128KB
Capacity: 30 GB
Sync: N/A
Create Volume
[HELP]
The default value indicates the maximum capacity using the selected disks. Entering a lower capacity allows you to create a second volume on these disks.
[↑ ↓]Change [TAB]-Next [ESC]-Previous Menu [ENTER]- Select

(3)-6 When prompting the confirmation, press *"Y"* to create this volume, or *"N"* to cancel the creation.

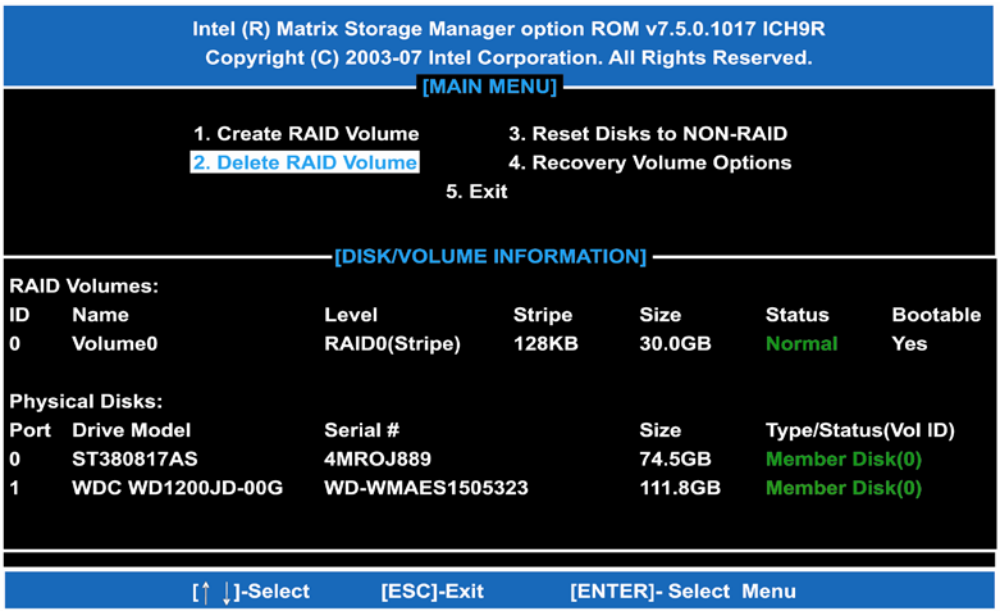

Intel (R) Matrix Storage Manager option ROM v7.5.0.1017 ICH9R
Copyright (C) 2003-07 Intel Corporation. All Rights Reserved.
[CREATE VOLUME MENU]
Name: Volume0
RAID Level: RAID0 (Stripe)
Disks: Select Disks
Stripe Size: 128KB
Capacity: 30 GB
Sync: N/A
WARNING: ALL DATA ON SELECTED DISKS WILL BE LOST.
Are you sure you want to create this volume? (Y/N):
Press ENTER to create the specified volume.
[↑ ↓]Change [TAB]-Next [ESC]-Previous Menu [ENTER]- Select

After the creation is completed, you can see detailed information about the RAID Array in the DISK/VOLUME INFORMATION section, including RAID mode, disk block size, disk name, and disk capacity, etc.


Intel (R) Matrix Storage Manager option ROM v7.5.0.1017 ICH9R
Copyright (C) 2003-07 Intel Corporation. All Rights Reserved.
[MAIN MENU]
1. Create RAID Volume
2. Delete RAID Volume
3. Reset Disks to NON-RAID
4. Recovery Volume Options
5. Exit
[DISK/VOLUME INFORMATION]
RAID Volumes:
ID Name Level Stripe Size Status Bootable
0 Volume0 RAID0(Stripe) 128KB 30.0GB Normal Yes
Physical Disks:
Port Drive Model Serial # Size Type/Status(Vol ID)
0 ST380817AS 4MROJ889 74.5GB Member Disk(0)
1 WDC WD1200JD-00G WD-WMAES1505323 111.8GB Member Disk(0)
[↑ ↓]-Select [ESC]-Exit [ENTER]- Select Menu

Delete RAID Volume

If you want to delete a RAID volume, select the **Delete RAID Volume** option in Main Menu. Press ENTER and follow on-screen instructions.


Intel (R) Matrix Storage Manager option ROM v7.5.0.1017 ICH9R
Copyright (C) 2003-07 Intel Corporation. All Rights Reserved.
[MAIN MENU]
1. Create RAID Volume
2. Delete RAID Volume
3. Reset Disks to NON-RAID
4. Recovery Volume Options
5. Exit
[DISK/VOLUME INFORMATION]
RAID Volumes:
ID Name Level Stripe Size Status Bootable
0 Volume0 RAID0(Stripe) 128KB 30.0GB Normal Yes
Physical Disks:
Port Drive Model Serial # Size Type/Status(Vol ID)
0 ST380817AS 4MROJ889 74.5GB Member Disk(0)
1 WDC WD1200JD-00G WD-WMAES1505323 111.8GB Member Disk(0)
[↑ ↓]-Select [ESC]-Exit [ENTER]- Select Menu

Please press [ESC] to exit the RAID BIOS utility.

Now, you can proceed to install a SATA driver controller and the operating system.

(4) Making a SATA Driver Disk

To install the operating system onto a serial ATA hard disk successfully, you need to install the SATA controller driver during the OS installation. Without the driver, the hard disk may not be recognized during the Windows setup process. First of all, please format a blank floppy disk. Secondly, follow up these steps below to produce a SATA driver disk.

Users can insert the Driver CD and the formatted blank floppy disk in another system. And then, please copy all of file of the f6flpy32 folder in the Driver CD to a floppy disk.

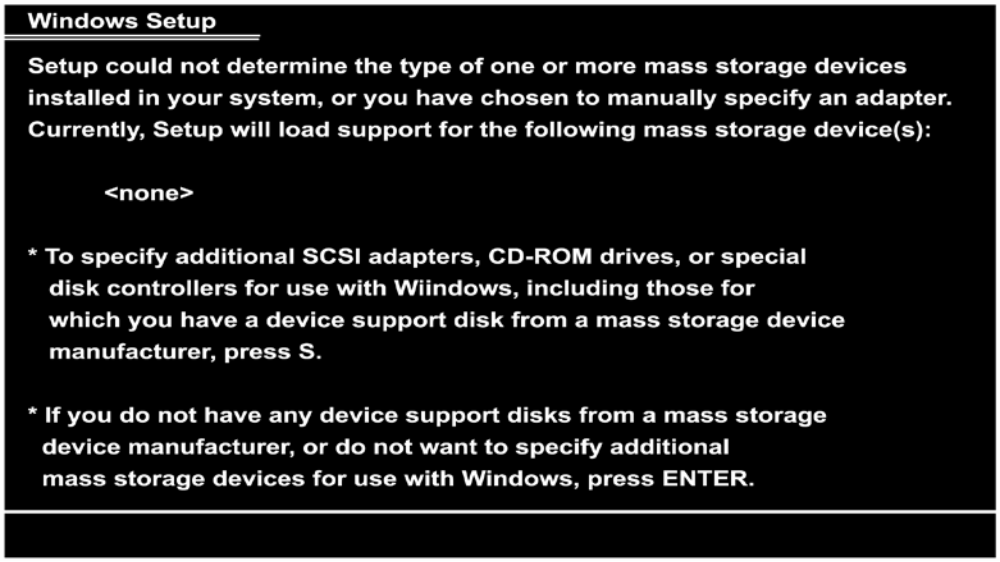
Please copy all of file of the f6flpy64 folder, if installing 64-bit Windows Operating System.

(5) Installing the SATA controller driver during the OS installation

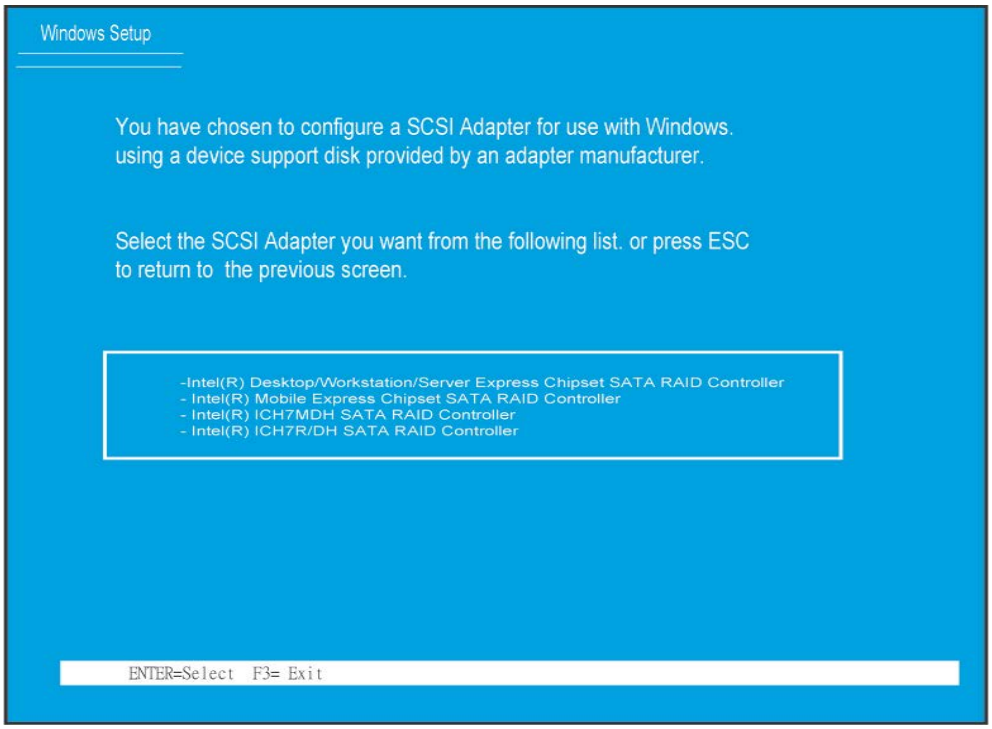
Now, the SATA driver disk is ready, and BIOS settings configured, you can proceed to install Windows 2000/XP onto your SATA hard drive using the SATA driver. Here is an example for Windows XP installation.

(5)-1 Restart your system to boot the Windows 2000/XP Setup disk, and press F6 button as soon as you see the message "*Press F6 if you need to install a 3rd party SCSI or RAID driver*". After pressing the F6 button, there will be a few moments for some files being loaded before next screen appears.

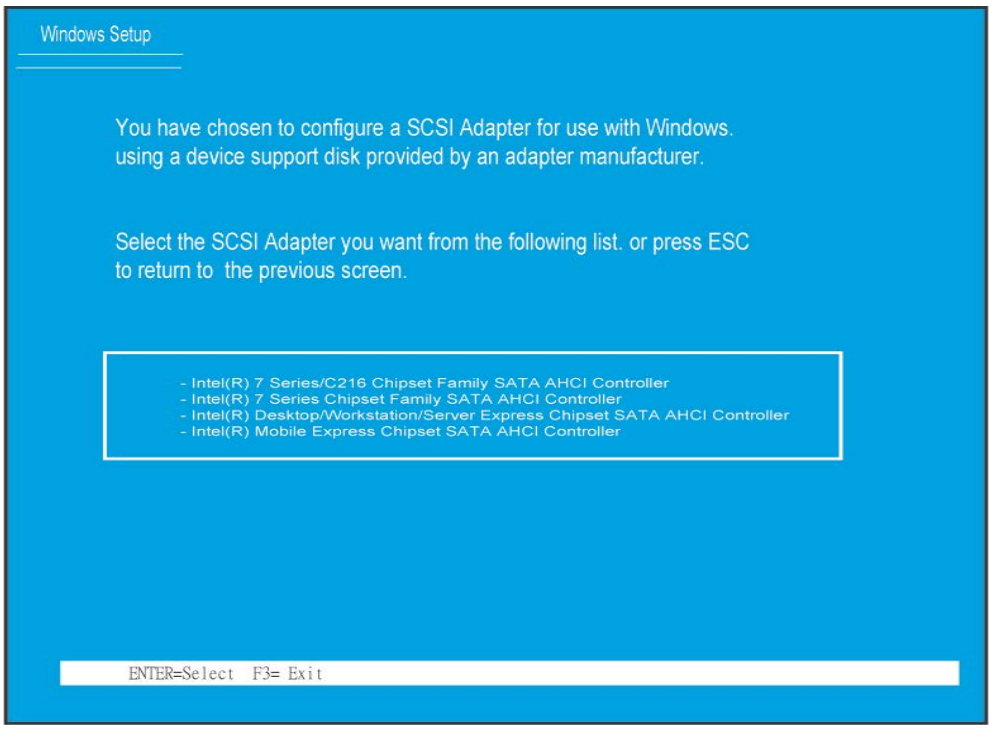
(5)-2 When you see the screen below, insert the floppy disk containing the SATA driver and press "*S*".


Windows Setup
Setup could not determine the type of one or more mass storage devices installed in your system, or you have chosen to manually specify an adapter. Currently, Setup will load support for the following mass storage device(s):
<none>
* To specify additional SCSI adapters, CD-ROM drives, or special disk controllers for use with Wiindows, including those for which you have a device support disk from a mass storage device manufacturer, press S.
* If you do not have any device support disks from a mass storage device manufacturer, or do not want to specify additional mass storage devices for use with Windows, press ENTER.

(5)-3 If the Setup correctly recognizes the driver of the floppy disk, a controller menu will appear below. Use the ARROW keys to select **Intel® ICH8R/ICH9R/ICH10R/DO/PCH SATA RAID Controller** and press ENTER. Then it will begin to load the SATA driver from the floppy disk.


Windows Setup
You have chosen to configure a SCSI Adapter for use with Windows.
using a device support disk provided by an adapter manufacturer.
Select the SCSI Adapter you want from the following list. or press ESC
to return to the previous screen.
-Intel(R) Desktop/Workstation/Server Express Chipset SATA RAID Controller
- Intel(R) Mobile Express Chipset SATA RAID Controller
- Intel(R) ICH7MDH SATA RAID Controller
- Intel(R) ICH7R/DH SATA RAID Controller
ENTER=Select F3= Exit

☞ If a message on the screen saying that one or some file(s) cannot be found, please check the floppy disk or copy the correct SATA driver again from the driver CD.


Windows Setup
You have chosen to configure a SCSI Adapter for use with Windows.
using a device support disk provided by an adapter manufacturer.
Select the SCSI Adapter you want from the following list. or press ESC
to return to the previous screen.
- Intel(R) 7 Series/C216 Chipset Family SATA AHCI Controller
- Intel(R) 7 Series Chipset Family SATA AHCI Controller
- Intel(R) Desktop/Workstation/Server Express Chipset SATA AHCI Controller
- Intel(R) Mobile Express Chipset SATA AHCI Controller
ENTER=Select F3= Exit

☞ If you are installing AHCI, Please select"Intel® 7 Series/C216 Chipset Family SATA AHCI Controller

16. iAMT Settings

The Intel® Active Management Technology (Intel® iAMT) has decreased a major barrier to IT efficiency that uses built-in platform capabilities and popular third-party management and security applications to allow IT a better discovering, healing, and protection their networked computing assets.

In order to utilize Intel iAMT you must enter the ME BIOS (CTRL + P during system startup), change the ME BIOS password, and then select "Intel® iAMT" as the manageability feature.

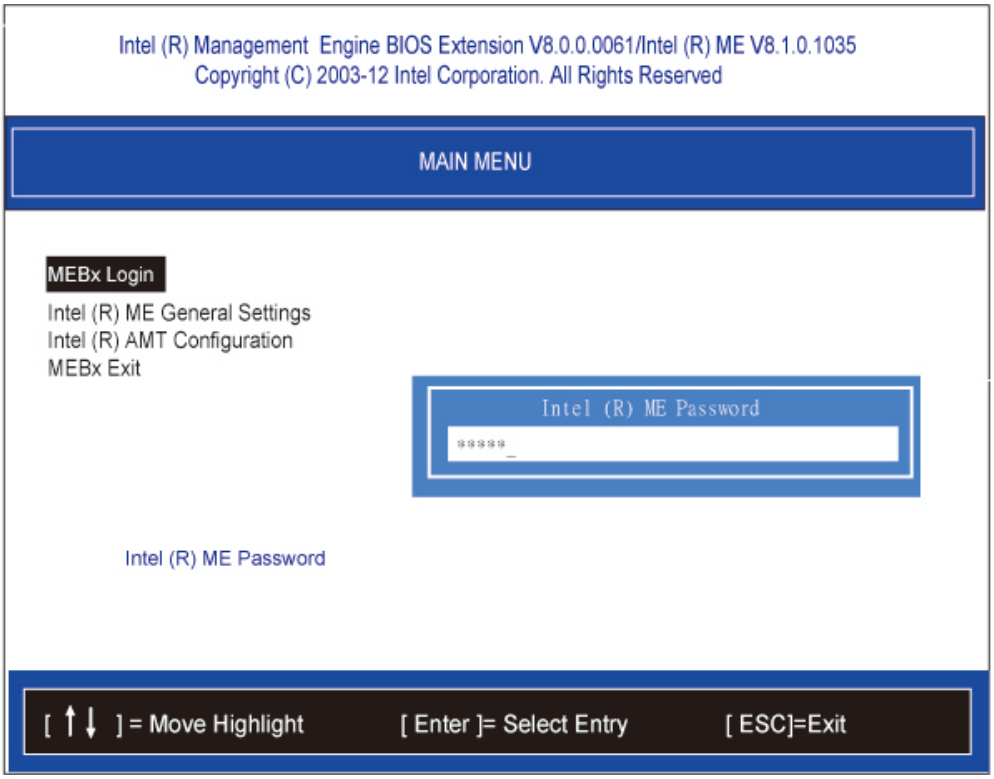
16.1. Entering MEBx

1. You must go to BIOS TO start iAMT function.
2. Exit from BIOS after starting iAMT, and press Ctrl+P to enter MEBx Setting.

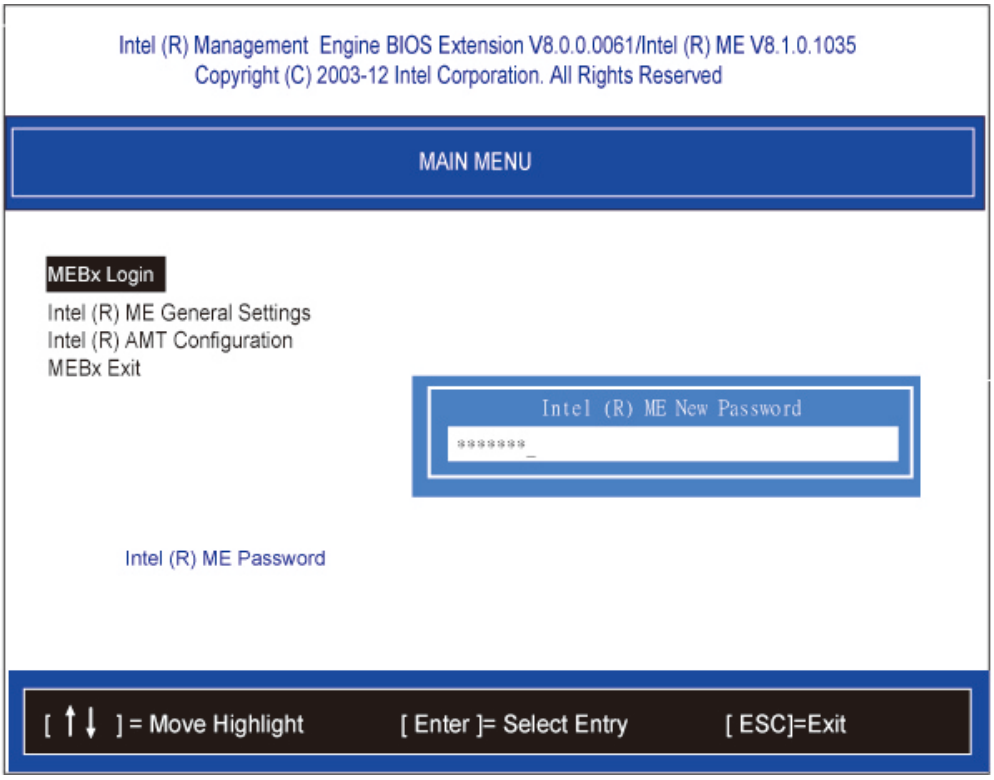
It is better to press Ctrl+P before the screen popping out.

16.2. Set & Change Password

1. You will be asked to set a password when first log in. The default password is 'admin'.


Intel (R) Management Engine BIOS Extension V8.0.0.0061/Intel (R) ME V8.1.0.1035
Copyright (C) 2003-12 Intel Corporation. All Rights Reserved
MAIN MENU
MEBx Login
Intel (R) ME General Settings
Intel (R) AMT Configuration
MEBx Exit
Intel (R) ME Password
*****_
Intel (R) ME Password
[↑↓] = Move Highlight
[Enter]= Select Entry
[ESC]=Exit

2. You will be asked to change the password before setting ME.


Intel (R) Management Engine BIOS Extension V8.0.0.0061/Intel (R) ME V8.1.0.1035
Copyright (C) 2003-12 Intel Corporation. All Rights Reserved
MAIN MENU
MEBx Login
Intel (R) ME General Settings
Intel (R) AMT Configuration
MEBx Exit
Intel (R) ME New Password
*******_
Intel (R) ME Password
[↑↓] = Move Highlight
[Enter]= Select Entry
[ESC]=Exit

3. You must confirm your new password while revising (as ***Remark 1***):

The new password must contain:

(example: !!11qqQQ) (default value) Eight characters

- **One upper case**
- **One lower case**
- **One number**
- **One special symbol, such as ! 、$ or ; ,**
- **(、" , excepted)**

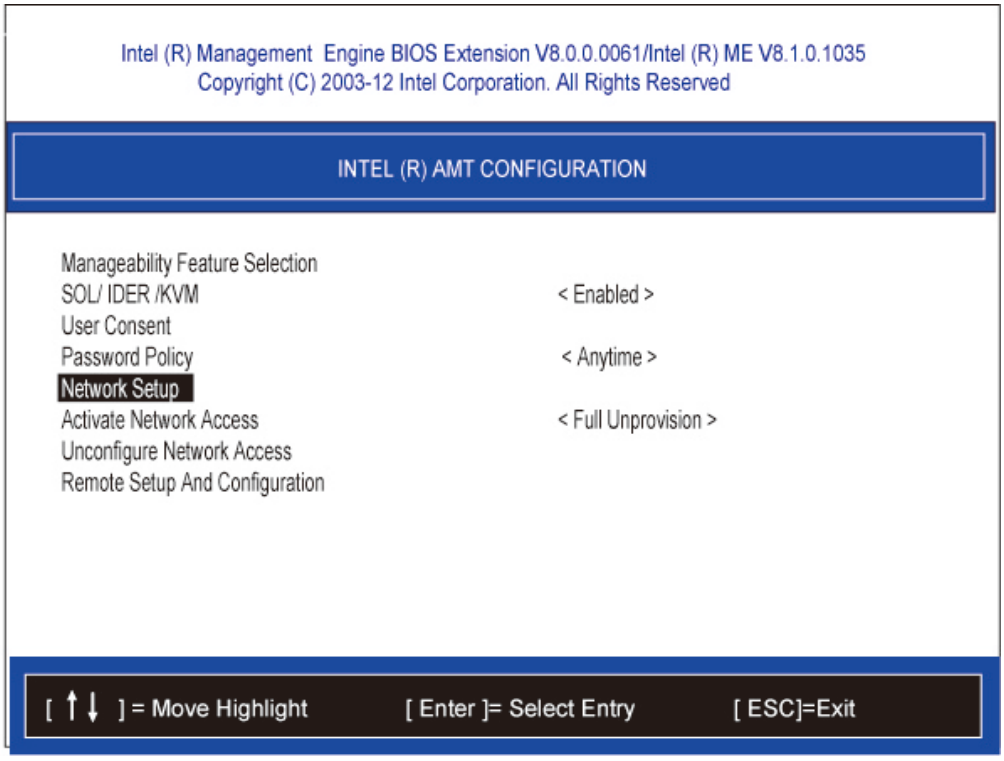
Underline (_) and space are valid characters for password, but they won't make higher complexity.

16.3. Intel® iAMT Settings

1. Select Intel® iAMT Configuration and press <ENTER>.

Intel (R) Management Engine BIOS Extension V8.0.0.0061/Intel (R) ME V8.1.0.1035
Copyright (C) 2003-12 Intel Corporation. All Rights Reserved
MAIN MENU
Intel (R) ME General Settings
Intel (R) AMT Configuration
MEBx Exit
[↑↓] = Move Highlight
[Enter]= Select Entry
[ESC]=Exit

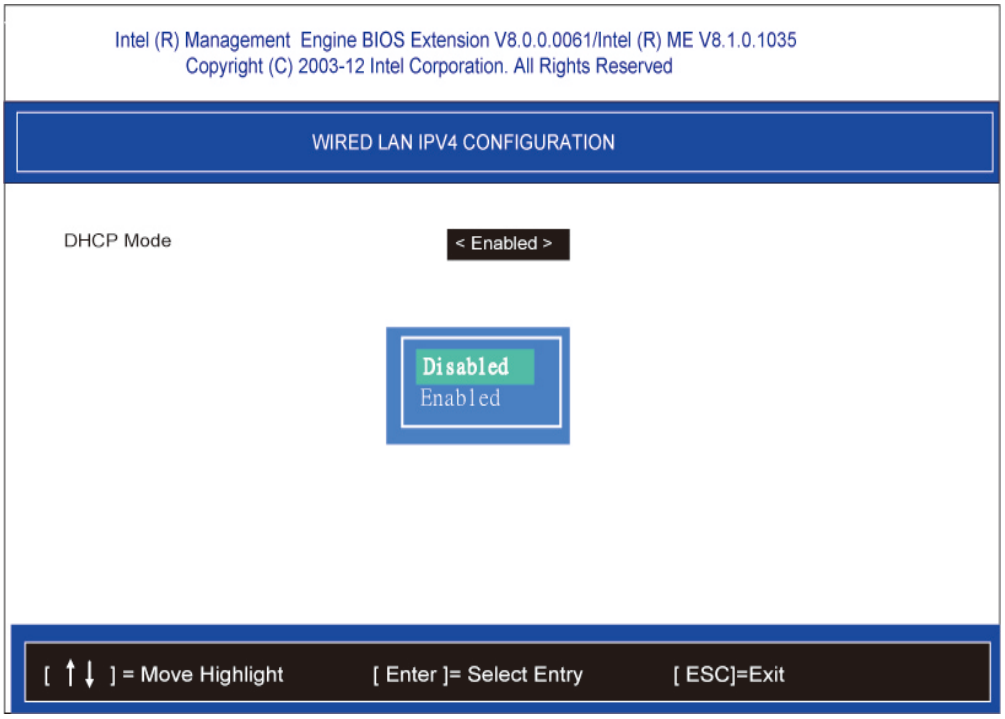
2. Select Network Setup to configure AMT.


Intel (R) Management Engine BIOS Extension V8.0.0.0061/Intel (R) ME V8.1.0.1035
Copyright (C) 2003-12 Intel Corporation. All Rights Reserved
INTEL (R) AMT CONFIGURATION
Manageability Feature Selection
SOL/ IDER /KVM
< Enabled >
User Consent
Password Policy
< Anytime >
Network Setup
Activate Network Access
< Full Unprovision >
Unconfigure Network Access
Remote Setup And Configuration
[↑↓] = Move Highlight
[Enter]= Select Entry
[ESC]=Exit

3. Select TCP/IP to get into Network interface, and set it to ***'ENABLED';*** into DHCP Mode, and set it to ***'DISABLED'*** (as ***Remark 2***):

Intel (R) Management Engine BIOS Extension V8.0.0.0061/Intel (R) ME V8.1.0.1035
Copyright (C) 2003-12 Intel Corporation. All Rights Reserved
INTEL (R) ME NETWORK SETUP
Intel (R) ME Network Name Settings
TCP / IP Settings
[↑↓] = Move Highlight
[Enter]= Select Entry
[ESC]=Exit

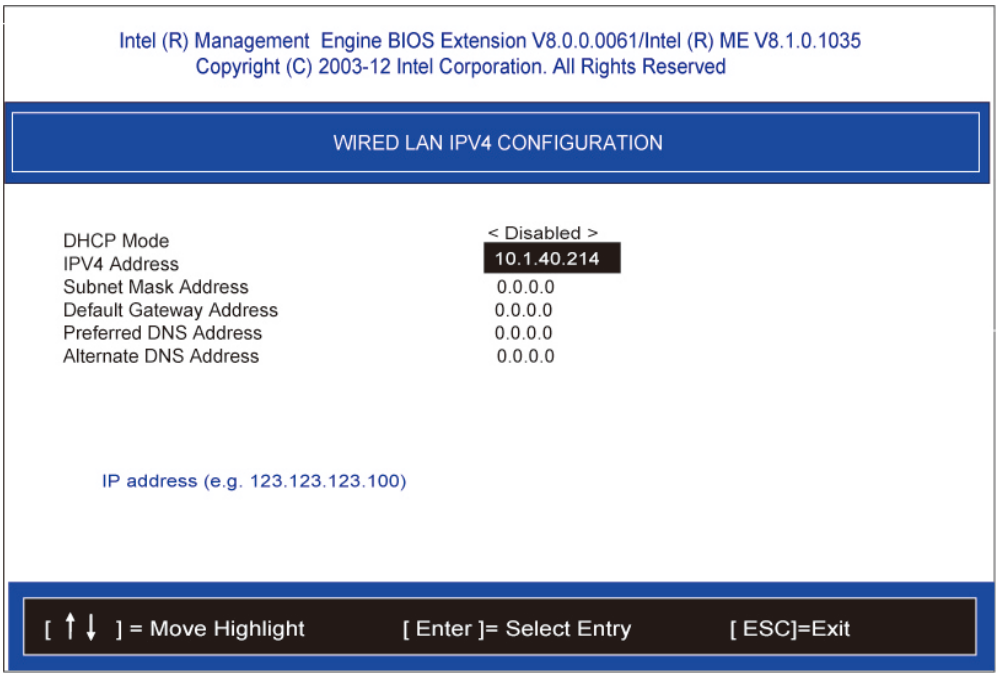
(3-1)


Intel (R) Management Engine BIOS Extension V8.0.0.0061/Intel (R) ME V8.1.0.1035
Copyright (C) 2003-12 Intel Corporation. All Rights Reserved
WIRED LAN IPV4 CONFIGURATION
DHCP Mode
< Enabled >
Disabled
Enabled
[↑↓] = Move Highlight
[Enter]= Select Entry
[ESC]=Exit

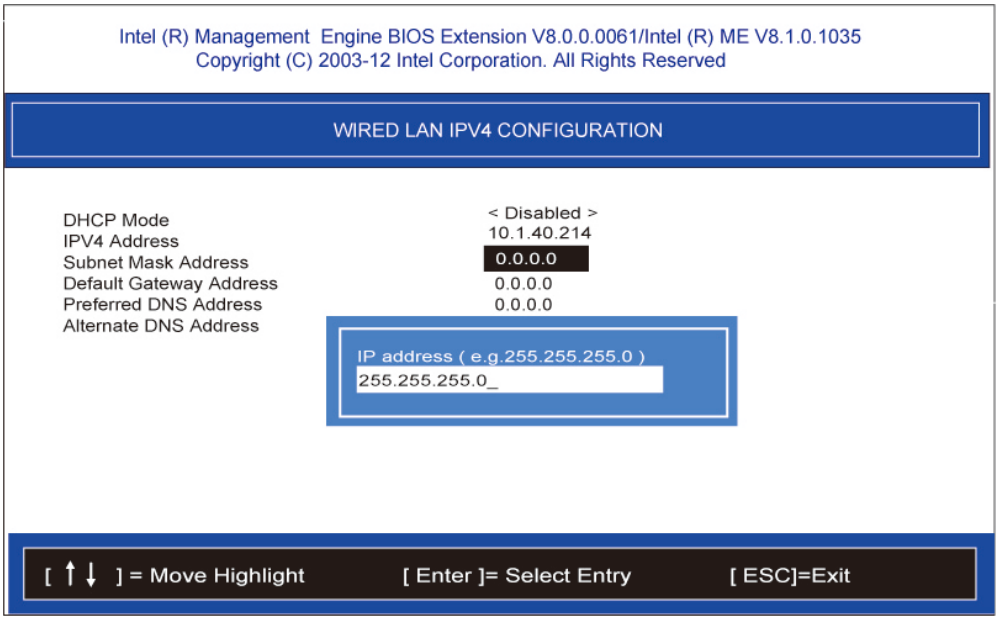
(3-2)

Remark 2 If DHCP Mode is disabled, you can make the following settings:

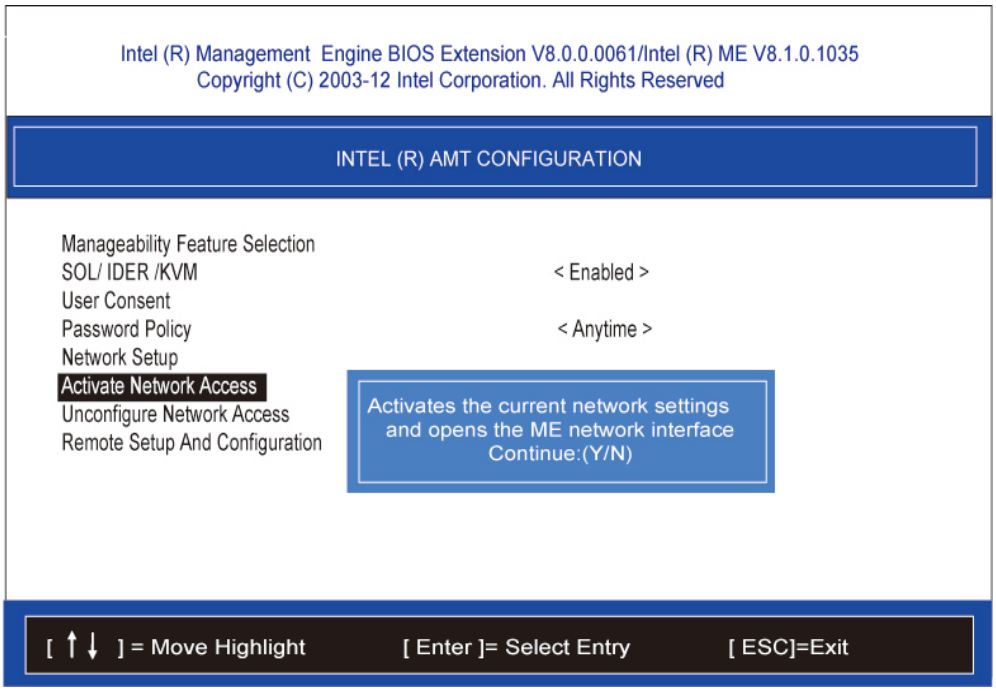
IP address



Subnet mask



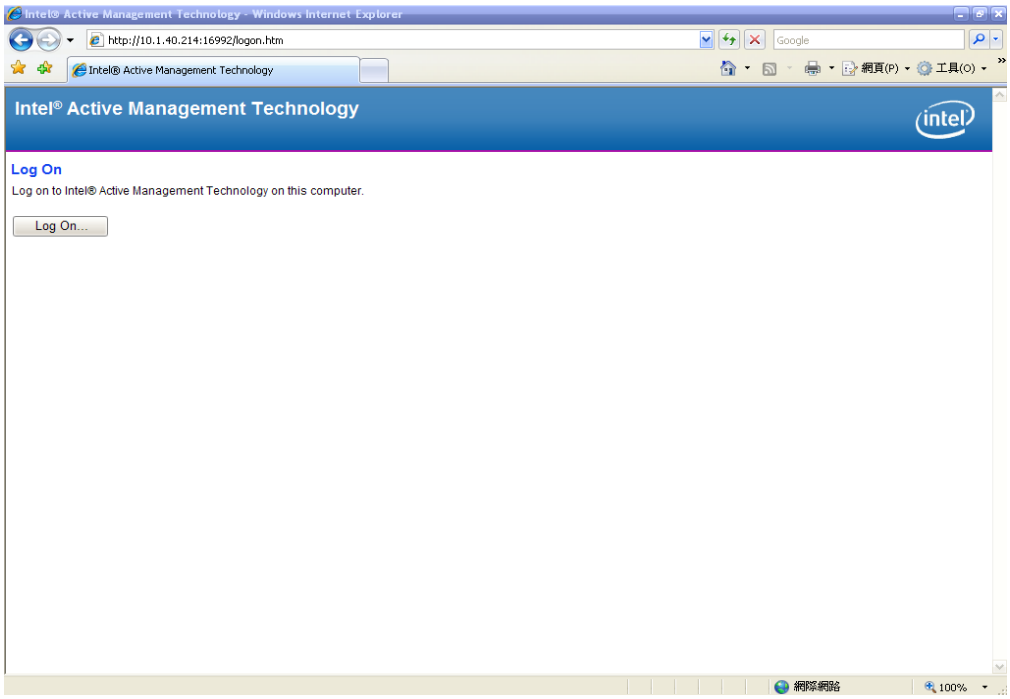
4. Back to Intel (R) AMT Configuration, then select Activate Network Acess and press <ENTER>.


Intel (R) Management Engine BIOS Extension V8.0.0.0061/Intel (R) ME V8.1.0.1035
Copyright (C) 2003-12 Intel Corporation. All Rights Reserved
INTEL (R) AMT CONFIGURATION
Manageability Feature Selection
SOL/ IDER /KVM
< Enabled >
User Consent
Password Policy
< Anytime >
Network Setup
Activate Network Access
Unconfigure Network Access
Remote Setup And Configuration
Activates the current network settings and opens the ME network interface Continue:(Y/N)
[↑↓] = Move Highlight
[Enter]= Select Entry
[ESC]=Exit

5. Exit from MEBx after completing the iAMT settings.

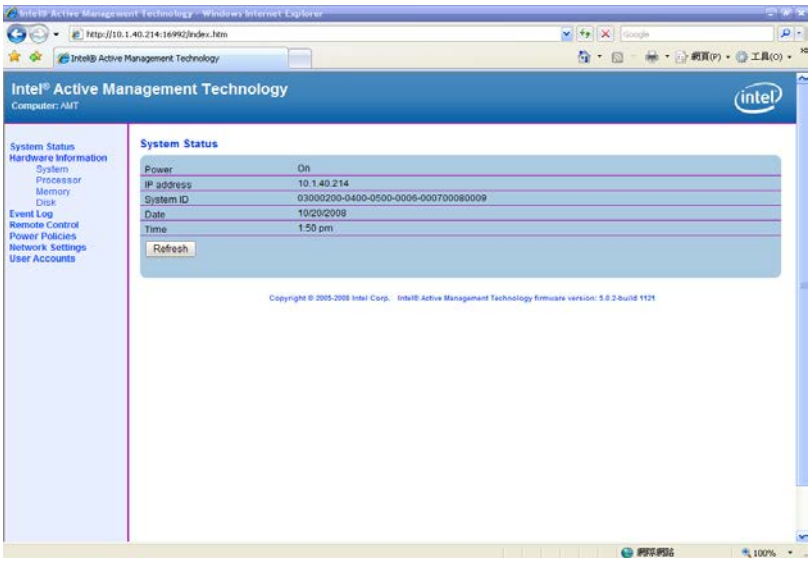
16.4. iAMT Web Console

1. From a web browser, please type http://(IP ADDRESS):16992, which connects to iAMT Web.
   Example: http://10.1.40.214:16992

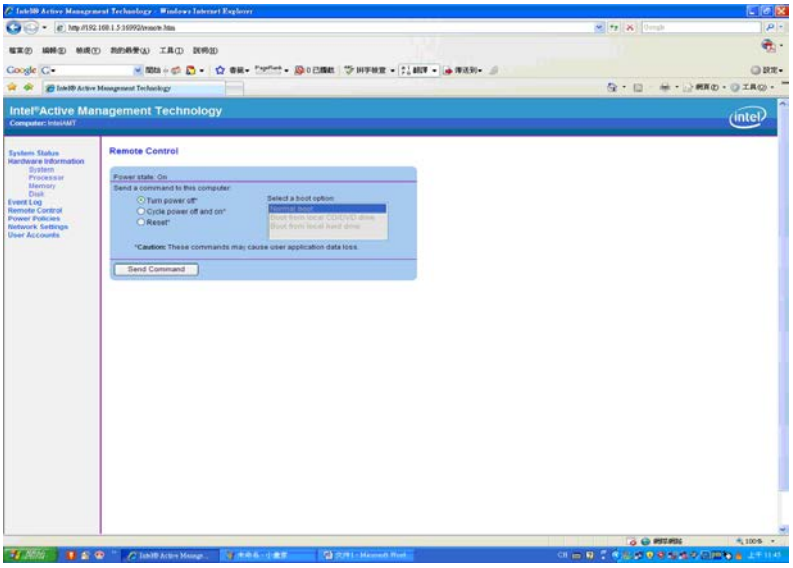

Intel® Active Management Technology - Windows Internet Explorer
http://10.1.40.214:16992/logon.htm
Intel® Active Management Technology
Intel® Active Management Technology
Log On
Log on to Intel® Active Management Technology on this computer.
Log On...
100%

2. To log on, you will be required to type in username and password for access to the Web.
   USER: admin (default value)
   PASS: (MEBx password)

3. Enter the iAMT Web.



4. Click Remote Control, and select commands on the right side.



5. When you have finished using the iAMT Web console, close the Web browser.

17. Technical Support

For technical support, please contact our Technical Support department:

e-mail: support@kontron.com
Web: http://www.kontron.com/support

Make sure you have the following information on hand when you call:

- the unit part id number (PN),
- the serial number (SN) of the unit; the serial number can be found on the type label, placed on the rear side of the system.

Be ready to explain the nature of your problem to the service technician.

If you have questions about Kontron Europe or our products and services, you can reach us by e-mail or at: www.kontron.com .

17.1. Returning Defective Merchandise

Please follow these steps before you return any merchandise to Kontron Europe:

1. Download the corresponding form for returning a device with an RMA No. [RMA (**R**eturn of **M**aterial **A**uthorization)] from our website www.kontron.com / Support / RMA Information.
   You also can contact our Customer Service department to obtain an RMA No.:
   e-Mail: service@kontron.com
2. Ensure that you have received an RMA number from Kontron Customer Services before returning any device. Write this number clearly on the outside of the package.
3. Describe the fault that has occurred.
4. Please provide the name and telephone number of a person we can contact to obtain more information, where necessary. Where possible, please enclose all the necessary customs documents and invoices.
5. When returning a device:
   - Pack it securely in its original box.
   - Enclose a copy of the RMA form with the consignment.

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